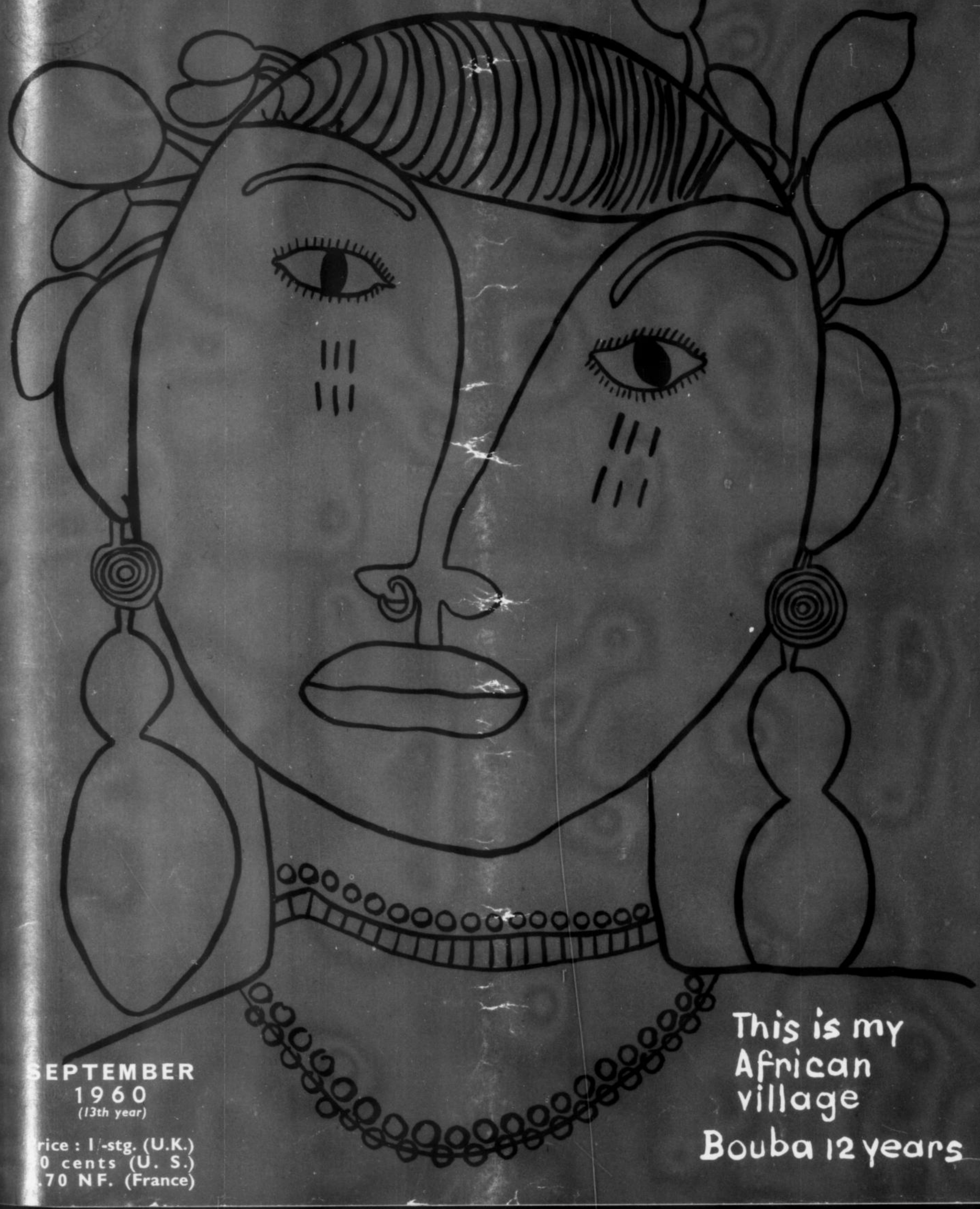
A WINDOW OPEN ON THE WORLD

The UNESCO Courier



SEPTEMBER
1960
(13th year)

rice : 1/-stg. (U.K.)
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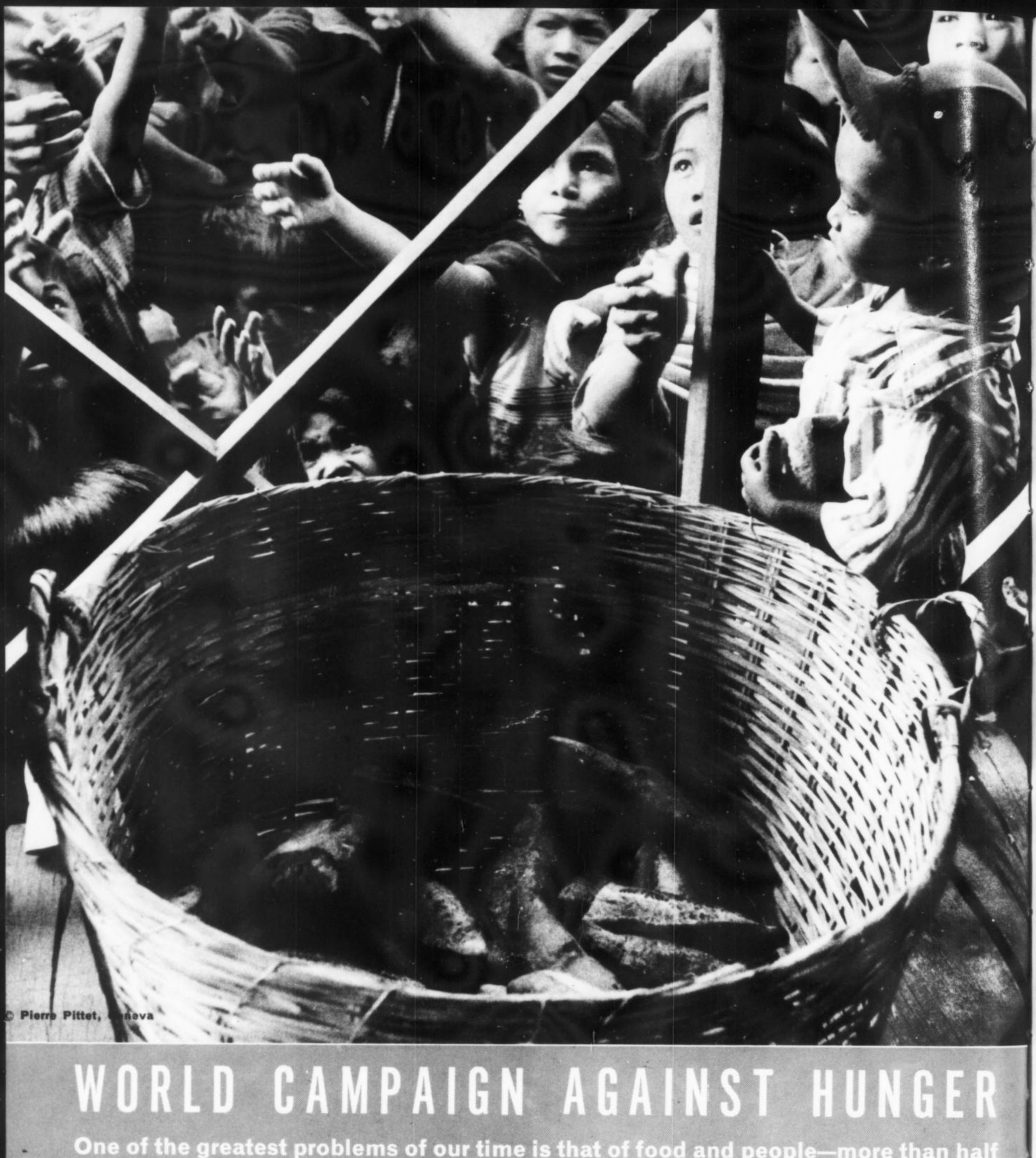
This is my African village
Bouba 12 years



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WORLD CAMPAIGN AGAINST HUNGER

One of the greatest problems of our time is that of food and people—more than half of the world's population is seriously underfed. For the past 14 years, this problem of population and food supplies has been in the forefront of the work of the U.N. Food and Agriculture Organization (FAO), which has now launched a world-wide Freedom-from-Hunger Campaign. The first objective of this five-year action programme which began in July is to bring home to people and governments the extent and cause of hunger and malnutrition in the world. This first phase will culminate in a World Food Congress in 1963. Mr. B.R. Sen, Director-General of FAO, has emphasized that there is no question of hunger being vanquished during the five-year campaign : "Our aim is to add substantially to man's knowledge of the problem and of what can be done about it. We want to build a firm basis for continuing action in the years ahead." (The Unesco Courier will deal with various aspects of this important world problem in a future issue.)

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Head of an African girl drawn by Bouba, a 12-year-old boy from the pilot-school at Pitoa in the Cameroons. For the remarkable story of Bouba and his class-mates and how they have built a chain of friendship and understanding with schoolchildren in Europe, see pages 4 to 13.

Drawing, Centre d'Art Africain, Pitoa

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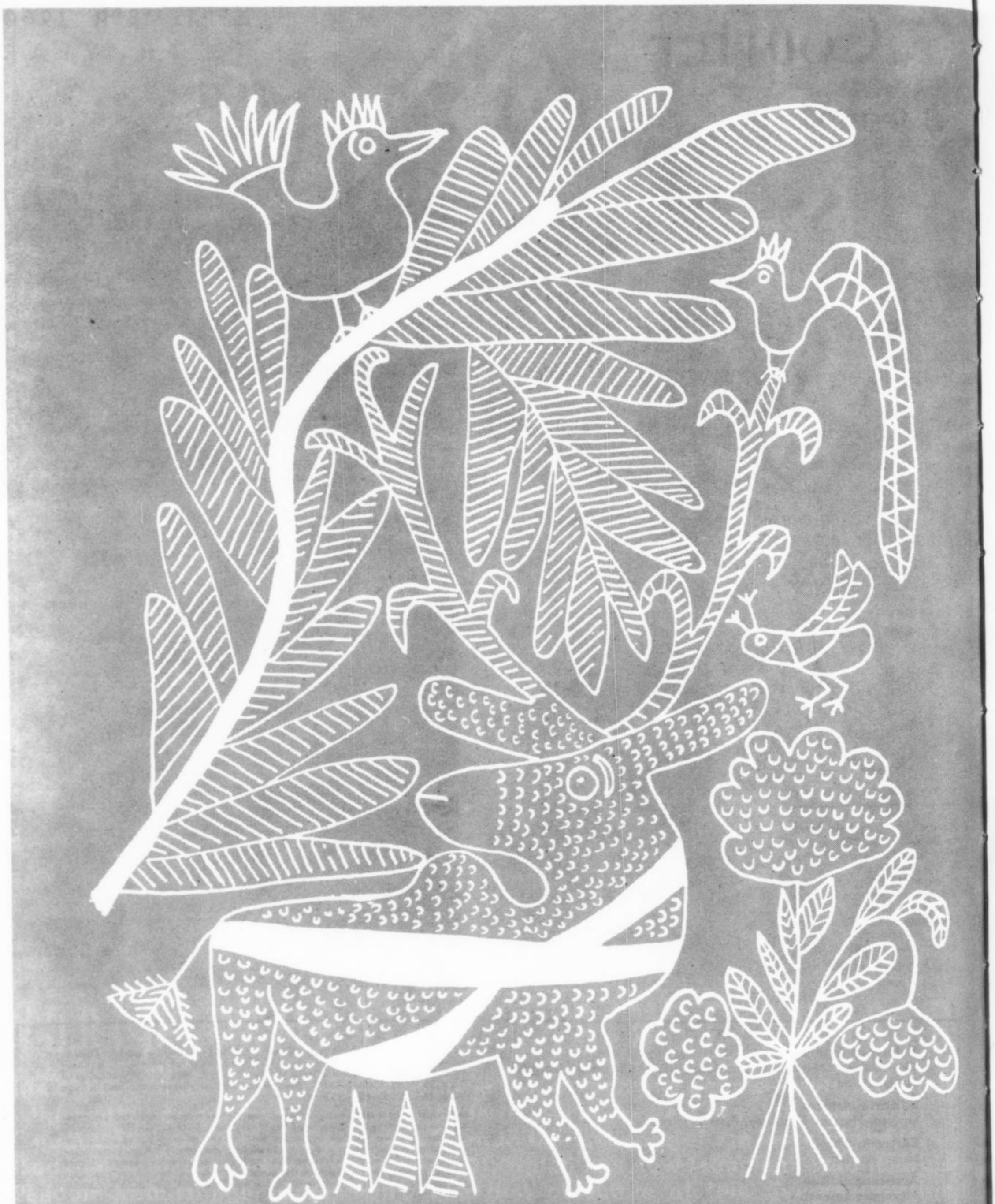


Remarkable creative skill and imagination are expressed in this drawing from the Art Centre at Pitoa (Cameroons) made by a youngster from one of the bush villages

PITOA — PILOT SCHOOL IN A CAMEROON VILLAGE

by René Caloz

PERCHED on an upturned packing case in the centre of the classroom, Boukar, the little Cameroon boy, hesitatingly read out the story he had written:

"While I am playing I find a little snake. I hit it with a stick. My father comes up. 'What are you doing?', he asks me. 'I am hitting this smake.' My father takes the stick and he hits the snake too."

When Boukar had finished, he looked up from the paper from which he had been reading. Judging from the faces around him the impression he had made, he proudly began to read it a second time. But the teacher told him to go back to his place, and called a little girl, Isma, to come out to the blackboard.

Isma jumped up, took a piece of chalk, rubbed her head reflectively for a moment, and then began to draw. As the chalk grated on the blackboard, Boukar gazed dreamily at the packing case. This old box had become a kind of tribune on which all the ambitions of a little world were centered. Each morning the teacher would ask: "Who is going on the box?". Only those children who had been able to make up and write out a short story on their own were eligible for this honour. The rest, the majority of the class, were still only able to describe orally what they had drawn.

At last Isma put down her chalk and turned a roguish eye towards the teacher, who asked her to explain the drawing. Looking at the blackboard with her head on one side, she said: "A woman is walking along the road. A bird comes along and steals some of her hair. With the hair the bird makes its nest." Smiling broadly, Isma turned around as the class roared with laughter.

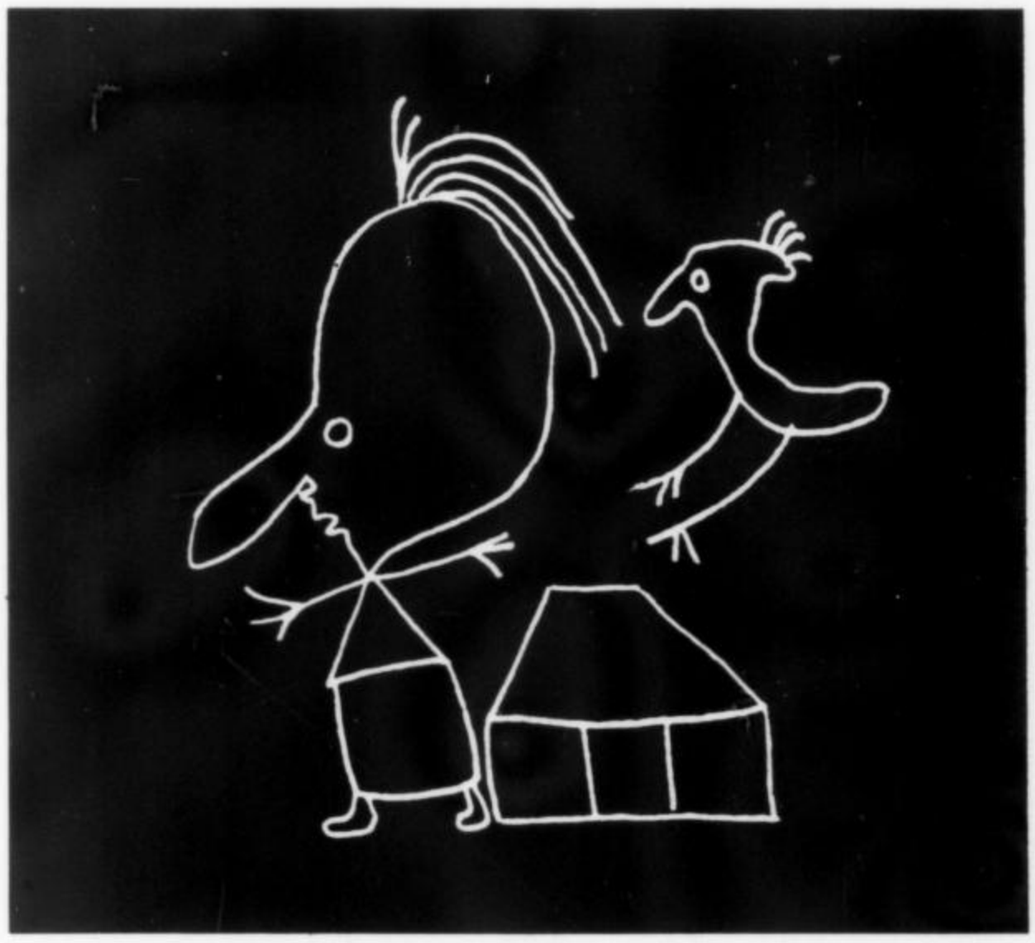
Both Boukar and Isma go to school in the Cameroon village of Pitoa. This mountainous, northern region is inhabited by the Fulbés and the Kirdis, two tribes which were once enemies. At Pitoa, 200 little Africans from villages in the bush live in at the school where they receive a primary education.

During the past few years, the school at Pitoa has become a real pilot centre for education in the African countries thanks to the perception and devotion of its staff and its teacher-director, Roger Lagrave. Here, like a bridge spanning differences between centuries and races, the most up-to-date methods are used to teach children who have come straight from remote villages in the bush.

In any country, the first day at school makes a big psychological impression on a child. It is his first real break with the warm, sheltered atmosphere of home life. On the African child who has just left the far-off tribal village where he was born, the effect is even greater. From one day to the next he is plunged into a totally strange civilization and way of life.

Added to the impact of this disturbing change are the feelings created by the long separation from family and friends. At Pitoa, therefore, the teachers need to use special methods and even to devise new ones capable of overcoming these inner conflicts and of opening up young minds to a different world.

In solving these problems, nothing has worked as well as painting and drawing. When they reach school, the children speak only their tribal languages. They



After drawing this picture on the blackboard, Isma explains: "A bird comes along and takes strands of a woman's hair to make its nest."

quickly and instinctively accept drawing as a means of expression and communication.

At the very first lesson, the teacher asks the children to make drawings of anything that comes into the heads. The first efforts are always clumsy and disorganized—a jumble of things which the child sees around him every day: gourds, huts, animals, trees, etc. The names of these, the children quickly learn to translate into French under the teacher's guidance.

Gradually the drawings become more orderly. As their skill with pencil and brush grows, the children—encouraged to use their imagination—begin to draw scenes from village life. Graphic expression precedes and then stimulates oral expression, bringing the first verbs to

CONT'D ON NEXT PAGE

PILOT SCHOOL

(Cont'd)

enrich a growing vocabulary. They start to make up their first simple phrases in French. Only then do writing lessons begin.

Mr. Lagrave, educational director of the Pitoa School, has noted that by the end of the first term the most advanced children are able to write their first words in French. By now a few others are speaking it, but the majority of the class is still at the drawing stage. By the end of the first school year most children have started to write in French.

Drawing and painting have become the key to a new world. They have helped children, already somewhat perplexed by the rudiments of the new language, to adapt their outlooks from those of children in an African tribal village, while giving them full scope for individual expression.

The teachers at Pitoa found to their surprise that when these children were left to draw on their own sources of inspiration and were not given any technical advice, they showed a natural creative aptitude and a sense of colour harmony even more truly spontaneous than those with which young Europeans, for example, are apt to surprise one.

From an early age, European youngsters come under all kinds of formative influences. The children from the bush, however, start almost from scratch. They have to seek everything within themselves, just as did our early ancestors. With uninhibited powers of inspiration, a powerful urge to express themselves, a brush and some paints, they have drawn from within themselves an youthful African art style that is both original and rich.

This style is expressed in certain, often repeated themes. There are, for example, the birds of the bush—herons, marabou-storks, ducks and cormorants—all offering colourful visions which impress themselves on the minds of youngsters who have spent their childhood along the banks of Africa's rivers. Here, as in other lands, a youngster will set down on paper what he knows, and not just what he sees. In depicting the cormorant he also shows the fishes it has swallowed and, in admiration for its angling skill, he sometimes pictures it with several beaks and long, supple necks.

Ten here is the serpent; the enemy, an ever-present threat to small bare feet scampering in the bush. So it is punished in effigy, shown pinned down by that killer of snakes, the secretary-bird. Or sometimes it becomes the animal totem, a symbol of taboo. But in all cases, the harmony of colours transforms these representations of reality. Thus, from the art centre in Pitoa has flowed a rich harvest of original and audacious works, full of suprising power and delightful freshness.

What becomes of these artists whose ages range from nine to fourteen ? Unfortunately, as is often the case, this childhood genius fades as maturity approaches. Only a few of the fortunate ones manage to retain it. The schoolchildren of Pitoa will become doctors, teachers and engineers. But it has all been worthwhile ; painting has been the magic charm to exorcise the spells besetting their childhood, helping them to take the giant leap from the African bush into the mid-20th century.

When the schoolchild at Pitoa has completed the three stages of this primary basic education (drawing, spoken language and writing) he has still not escaped from his isolation. He knows how to write in French. But to whom can he write ? He can read. But what will he find to read ? Unlike youngsters in European countries, for example, these children of the Cameroons until recently had no books suitable to their knowledge and capabilities other than school textbooks. Thus they came to look on reading as a purely classroom activity.

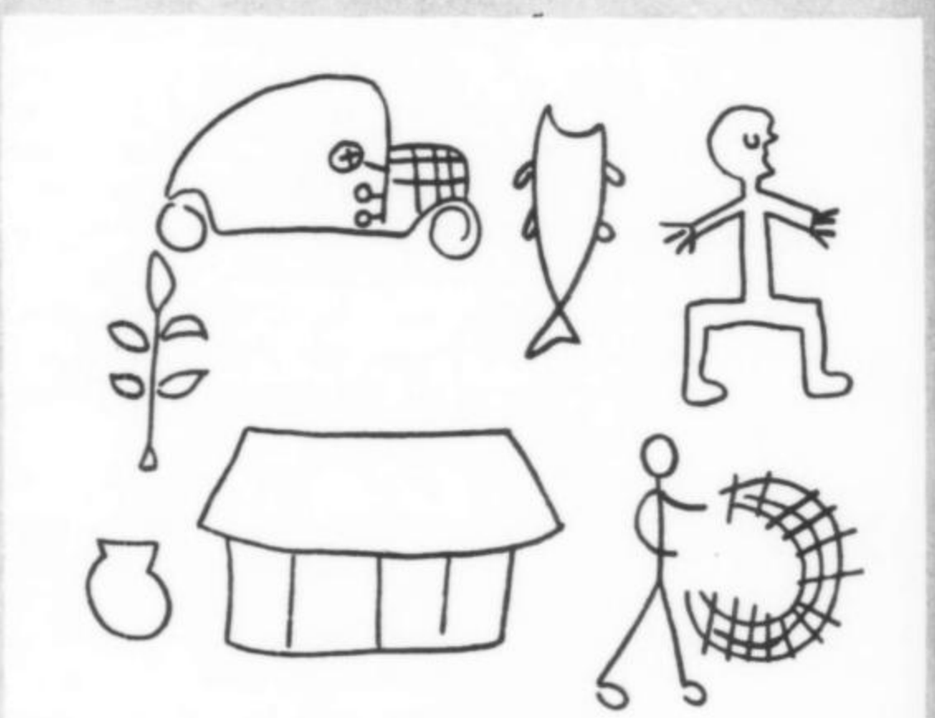
To these two problems of isolation and reading material, the Modern Education Group of the Cameroons has also found ingenious solutions—and has put them into practice. These educators provided reading material corresponding to the educational level and background of this young public, by producing collections of short stories: "Fables of the Bush," "Mamadou, the little Shepherd," "At the World's End," which are lively, documentary texts telling about such things as the millet crop, the mangrove tree, monkeys, the river, fishing, and so on.

Roger Lagrave went even further and, using some of the methods developed by the French educator, C. Freinet, he got his pupils to help him in writing these new books. Out of this grew the "African Book Club", whose publication fund is partly covered by the sale of children's drawings and also through radio broadcasts.

Each year, the boys and girls in one or more of the classes set to work on a new book whose preparation is also the occasion for a concentrated study of the French language. The themes chosen for these books reveal a progressive broadening of horizons. The first, "Malik Child of the Bush," described the life of a typical child and his family in a Cameroons village. "Two Children in the Northern Cameroons" told the story of a child as he left his village and began to experience the realities of the larger life of his country.

The third book, "Bouba and Jacques" had a special significance for it brought the children in contact with another country, France, and a way of life very different

DRAWING THEIR W



1. DRAWING is used as a bridge leading to reading and writing by the children from the bush who attend the school at Pitoa, Cameroons. First efforts with pencil and brush are usually a jumble of familiar objects—huts, gourds, trees, animals. From the names of these, the children learn their first words in French.

from their own. All the material for this book came from a pen-friends' exchange between the boys and girls of Pitoa and those of Costes-Gozon in the Aveyron Department of southern France.

Each week, in the form of questions and answers between a French boy, Jacques, and his African friend, Bouba, villagers in France and African bush dwellers nearly 4,000 miles away got to know more about each other (see page 8).

The fourth book in the series, completed this year, is entitled *Nous de partout* (We from everywhere). Having got to know his own country, the child sets out to explore other parts of the world and discovers that modern techniques can help to free him from his isolation.

Suggestive of the future possibilities of this admirable educational venture born in Africa are the words of the preface to this latest book :

"In gaining its independence, the Cameroons has taken its place among the nations.

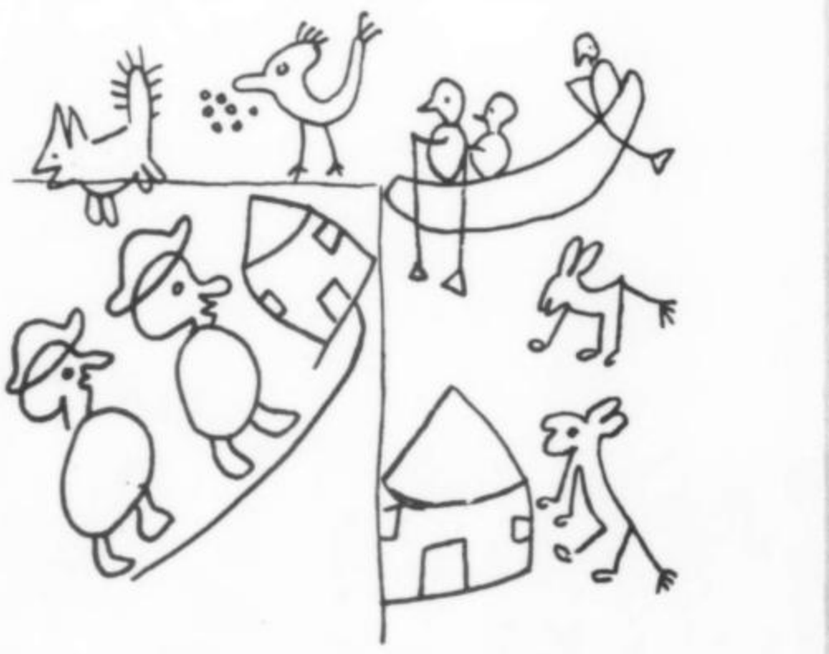
"In this book we would like you to meet some of these nations—our friends. But this is not a geography book, and you will not find in it the names of rivers and their lengths nor the names of mountains and their heights. Instead, every page shows children, many children and their ordinary day-to-day lives in these far-off countries.

"They have sent us their school newspapers in which they have described their life, their work and play, their problems and their hopes.

"Reading what they have written, we have been very touched for we have found there our friends, as they really are, from every continent—our friends from everywhere. For wherever they come from, from hot lands or from the cold ones, whether they eat wheat, or millet or rice, they are all our friends and this is something that no frontiers can change.

"And we need this friendship so that we may work together to build a vast and a brotherly world. This friendship makes us very happy."

R WAY TO FRENCH WITHOUT TEARS



2. GROWING SKILL of young artists plus freedom to use their imagination quickly brings a change. Scenes from village life replace the "jumble" drawings. Vocabularies expand, and soon the children are able to write down in French the names of the objects and persons they have depicted in their drawings.

3. HARVEST SCENE with the family at work in the fields was drawn by a young child from the bush after attending school for two months. Through his first drawings he learned words like father, mother, millet and gourd. Group scenes introduced verbs, and now he begins writing his first sentences.

BOUBA AND JACQUES

THE BIRTH OF A DIALOGUE BETWEEN AFRICA & EUROPE

Over the signature of Bouba, the schoolchildren of Pitoa (Cameroons) began an exchange of letters a few years ago with Jacques and the schoolchildren of Costes-Gozon, a tiny village in southern France. They wrote of their work, their games, and their everyday life. The letters became part of the reading and writing programmes of both schools (See page 5). Each week they were read, explained, discussed and recopied. In this way the Boubas of Africa and the Jacques of Europe contributed to a better understanding of each other. Their efforts have resulted in a delightful and informative little book *Notre Ami Jacques* (Our Friend Jacques) published by the Club African du Livre, at Pitoa, from which the passages on the following pages have been selected.

Pitoa (Cameroons), October 1.

My dear friend Jacques,

I am very happy to be writing to you. My name is Bouba and my father's name is Cadji. He grows millet. I chase away the birds and the monkeys from his crops and I tend his herd of goats. I have a sister called Djénabou and a little brother whose name is Oumar. My mother grinds the millet, crushes the ground nuts and sweeps out the hut. I hope you and your parents are well. Goodbye for now and I hope to hear from you soon.

Your friend: BOUBA.

Costes-Gozon (France)
October 1.

My dear friend Bouba,

My name is Jacques Lacroix. My father is a farmer. He has a flock of 30 sheep and four pigs. My mother looks after the house, cleans it, prepares the meals does the washing and helps my father in the fields.

I have a brother called Maurice and two sisters, Jeanette and Léonie.

I'm glad I can write to you and I hope you are well.

Your friend: JACQUES.

THIS IS MY HOME

BOUBA: In June, when the school closes I shall walk down the hill towards my village, very happy to see my home again.

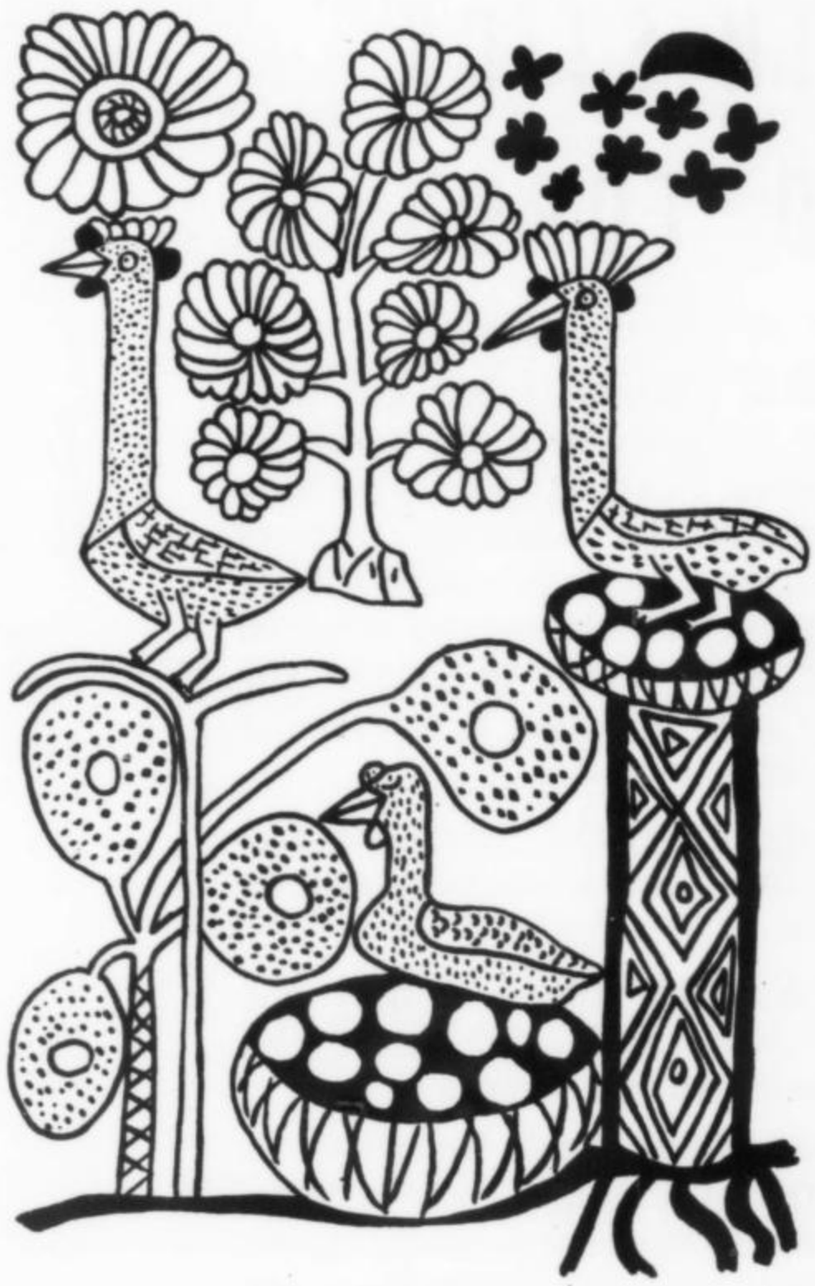
All around it are young cotton plants, corn and millet. It has a straw roof which keeps it fresh and cool. The side which looks out on the road has a verandah. The second side has a window but as it is unprotected, it is always drenched during the rainy season. The third side also has a verandah held up by two open brick walls. This is where my father quietly sits sewing his clothes. We also eat our meals there and sleep out at night during the hot season.

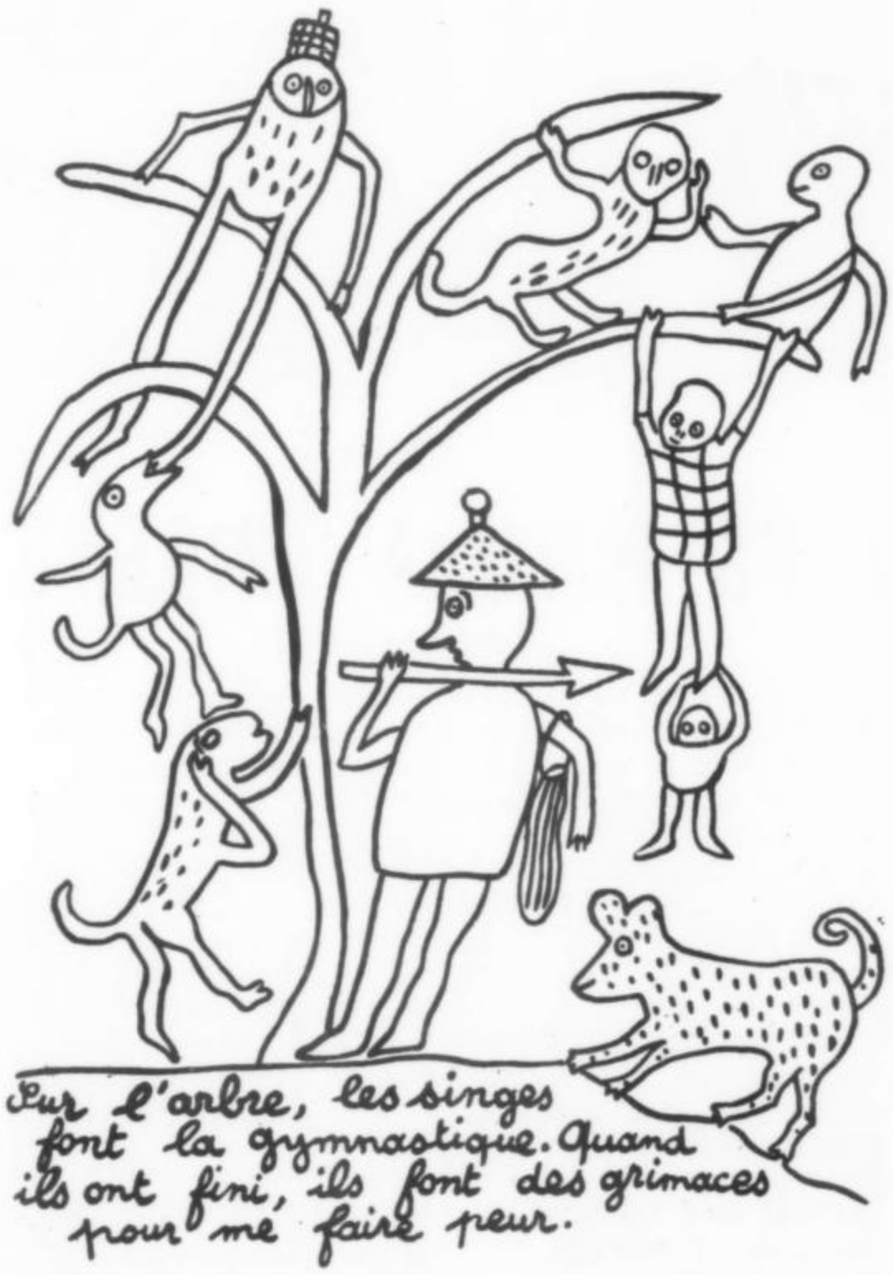
I shall be glad to sleep in the house where I was born.

JACQUES: *My home seems to hang on a red and green hillside: brick-red soil and green alfalfa and young corn. The house is built of stone covered by rough-cast plaster. The walls are pink and the tiled roof is covered with moss. Some grey and white pigeons circle overhead and with a fluttering of wings land on the stone-edged pigeon-house.*

In another building on the far side of the stone courtyard are the barn, the sheep-pen, the stable and the pigsty.

In an open shed leaning against a wall my father keeps his cart and his binder. In the same shed is the sling in which we put the ox when it is being shod.





BALL AND WHISTLE

BOUBA: We've decided to make a ball. Armed with knives we go off to the river bank. The sap from the trees here is like the latex of rubber trees. We make a gash in a tree and the sap starts to flow. I cover one of my thumbs with the sap which starts to harden. To get a thicker layer we add some manioc flour. Then we let some of the sap run on to Abbo's stomach. The sap spreads out and solidifies. I go and fetch a hollow reed stem. I take off the latex from my thumb and have a small cylinder. With the hollow stem I blow into it and the latex swells up until it makes a sphere about eight inches across. To give it a thicker surface, I spread on it the sap which covers Abbo's stomach. Finally the skin of the bladder we have made is nearly half an inch thick. We go back to the village very pleased with ourselves and in the evening we play with the ball.

JACQUES: *I am guarding the pigs in the chestnut grove. I pick out a new, straight, smooth branch and I cut a piece from it about six inches long and about as thick as my thumb. Halfway down I cut into the bark just down to the wood. With the handle of my knife I tap very lightly on the bark and with a twisting movement I slide it carefully from the wood. About half an inch from the end of the bare wood and in the centre, I cut a triangular notch, and from here to the end of the wood I cut out a narrow shaving. I wet the wood with saliva and slide back the tube of bark over it. Now I cut out of the bark a piece half an inch long and a quarter of an inch wide above the first hole I made in the wood. My whistle is ready. I blow it and keep blowing, blowing, blowing.*

NIGHT FISHING WITH STICK AND TORCH

BOUBA: When it has got dark Nohou, the man with the powerful voice, cries: "Let all those who have eaten their fill, who are full of strength and courage, come fishing with me; let all those who are still hungry stay here to wash the cooking pots of their mothers and their brides-to-be."

Picking up sticks, matches and torches of dried grass, we run to join him.

At the river's edge we light our torches and wade out until the water is up to our thighs.

Mamadou and I fish together. A fish, lured by the light, comes close. It seems dazzled and stays quite still. With a quick blow from his stick, Mamadou stuns the fish. I grab it easily and put it into a gourd.

Suddenly I see a big catfish. This time I hit out and stun the fish. But my stick breaks in two.

Then I see another big fish and am just about to grab it when Mamadou hits my hand. I start crying and to comfort me, Mamadou gives me half his catch.

HARVEST TIME

BOUBA: In the field the ears of millet are drooping towards the ground and the stems are bent. It is harvest time.

My father gives 15 bowls of millet to my mother. She grinds it into flour and makes a meal for the labourers. My father kills a goat. When these preparations are finished, my father goes to borrow some machetes. He warns the neighbours that there is work to be done and then he goes to see the witch-doctor. The next day work begins. With their machetes, the men cut the stalks a few inches above the soil. They lay them out on the ground in parallel rows. It is hard work, but the rhythm of a tom-tom helps to keep them at it.

We children follow the harvesters, chewing millet stems as though they were sugar cane.

Three days later, the women cut off the ears from the stalks and carry away the ears in large baskets to the place where they will be threshed.

JACQUES: *The oxen are pulling the harvester-binder. I grease it well, put in a good supply of string and prepare a reserve supply and a spare blade.*

My father leads the oxen. Robert is in the driving seat; with a lever he can raise or lower the blade according to the cut he wishes to make.

The oxen pull hard. The cutting blade rattles in its frame, the drum squeaks as it turns, the belts carry the wheat up to the binder which gives a bang as each sheaf is tied; the sheaf carrier tilts as Robert presses a pedal, and the sheaves fall.

Mother and I stack the sheaves in lines. The thistles prick our fingers.

ANGLERS WITH A TRIDENT

JACQUES : *When my father and my uncle were schoolchildren, they would leave home early in the morning so as to be able to go fishing before classes began.*

Usually about a dozen boys went down to the stream to fish with a trident.

A few of the boys kept watch in case the gamekeeper should pass that way. Two others had an iron trident attached to a long stick. They went carefully towards the water and when they saw a trout motionless just above the bed of the stream, their trident flashed into the water. Impaled by the prongs, the fish fought madly. But they quickly had it out on the bank and in a twinkling it was hidden in a satchel between the schoolbooks and the sandwiches.

Then these young rascals went to a place well hidden by thick bushes and made a fire on which to cook their catch. How good it tasted.

Sometimes they were late for school and when the teacher scolded them, they replied, timidly: "We had to help with the chores at home."

MAGIC RIDERS AND CYCLISTS

BOUBA: I went to visit my brother Oumarou, one of the chief's warriors. Moussa and Zoussoufa told me: "Tomorrow you will see Djaoro Sanda, the magic horseman."

The next day in the centre of the village Djaoro Sanda is there beside his horse. A large crowd had gathered to watch the show.

First Djaoro stuck pointed sticks into the ground in a straight line. "Hup, hup," he cried to his horse which at once set off at a gallop. When they reached the first stick, Djaoro slid under the horse's belly until he was hanging by his legs. Without slowing down he snatched up one stick, then another and another until he finally had them all in his hand. Then he twisted himself back up into the saddle.

"Bravo! Djaoro Sanda," cried the spectators. Some people, who will believe anything, say that Djaoro can turn himself into a panther or a snake without frightening his horse. His horse is like any other horse, but it has been trained for a long time by its master.

JACQUES: *One Sunday I went to see a motor-cycle cross-country race. In the afternoon cars began to arrive, pulling small trailers on which the motor-cycles were fixed.*

The circuit was marked out. It went down the side of a little hill, up another hill, with a sharp turn at the top, and down into the bed of a dried-up lake. Then it went over a springboard and back up the first hill to the starting point.

The riders brought their machines to the start line and when the signal was given they roared off in a cloud of dust. First away was No. 5 which shot down the hill at full speed. It went over the springboard, shot into the air and came down five yards further on. The machines went round the course ten times and No. 5 was the winner.

THE DAY WE WERE HERDSMEN

BOUBA: My father calls me. "Go into the hut and take down the stick and the gourd that are hanging from the roof," he says. "Now go after your big brother," he tells me "you are going to look after the herd."

I am pleased at the idea of taking care of the animals. With the gourd in my hand and the stick over my shoulder I run after my brother and take his place. At the water's edge our beasts drink their fill. I cut a stem of wild millet and make a little flute. While the goats are nibbling at the young grass, I join the other little herdsmen, who are also busy making flutes. We blow our flutes together and make some fine tunes.

Then we send the smallest children back to the village. "You, Oumarou, bring us some millet flour, and you, Djibrilla, some dried fish." We do our cooking and drink the water in our gourds. In the evening we sing as we go home.

JACQUES: *Julian and I have been told to watch over the oxen. We leave them to graze and we run to the cherry tree. Julian climbs it, cuts off branches loaded with cherries and throws them to me. We eat lots of cherries and we even swallow the stones.*

An hour goes by and Julian comes down from the tree. When we go back to the field the oxen have disappeared. We look for them in the other fields and finally we go back to the village.

Father is waiting for us on the stairs. "The oxen came back on their own at full gallop," he tells us severely.

We feel vexed and foolish. We hardly eat any supper and we don't sleep much that night—we both have stomach ache.

WHEN I GROW UP

BOUBA: I shall raise cows, sheep and goats. I won't grow any crops, but with the milk from my cows I shall buy a big gourd of millet.

With the meat of a goat or a ram killed each month we shall eat well.

Clothes will be no problem. I shall take a six-years-old bull to market and with what it brings I shall buy fine clothes.

My son will guard my sheep, my daughter will look after the goats and I shall take the cows out to the pastures. There I may have to endure rain and storms, but the delicious, creamy milk will soon make me forget these discomforts.

When I grow old I shall employ paid shepherds. In the shadow of the "danki", I shall stretch myself on my sleeping mat, a glass of coffee by my side. "Bouba has more than a hundred head of livestock; he is one of the richest among us," the villagers will say.

When I am 80 years old I shall sell some of my animals and I shall spend the money on a pilgrimage to Mecca.

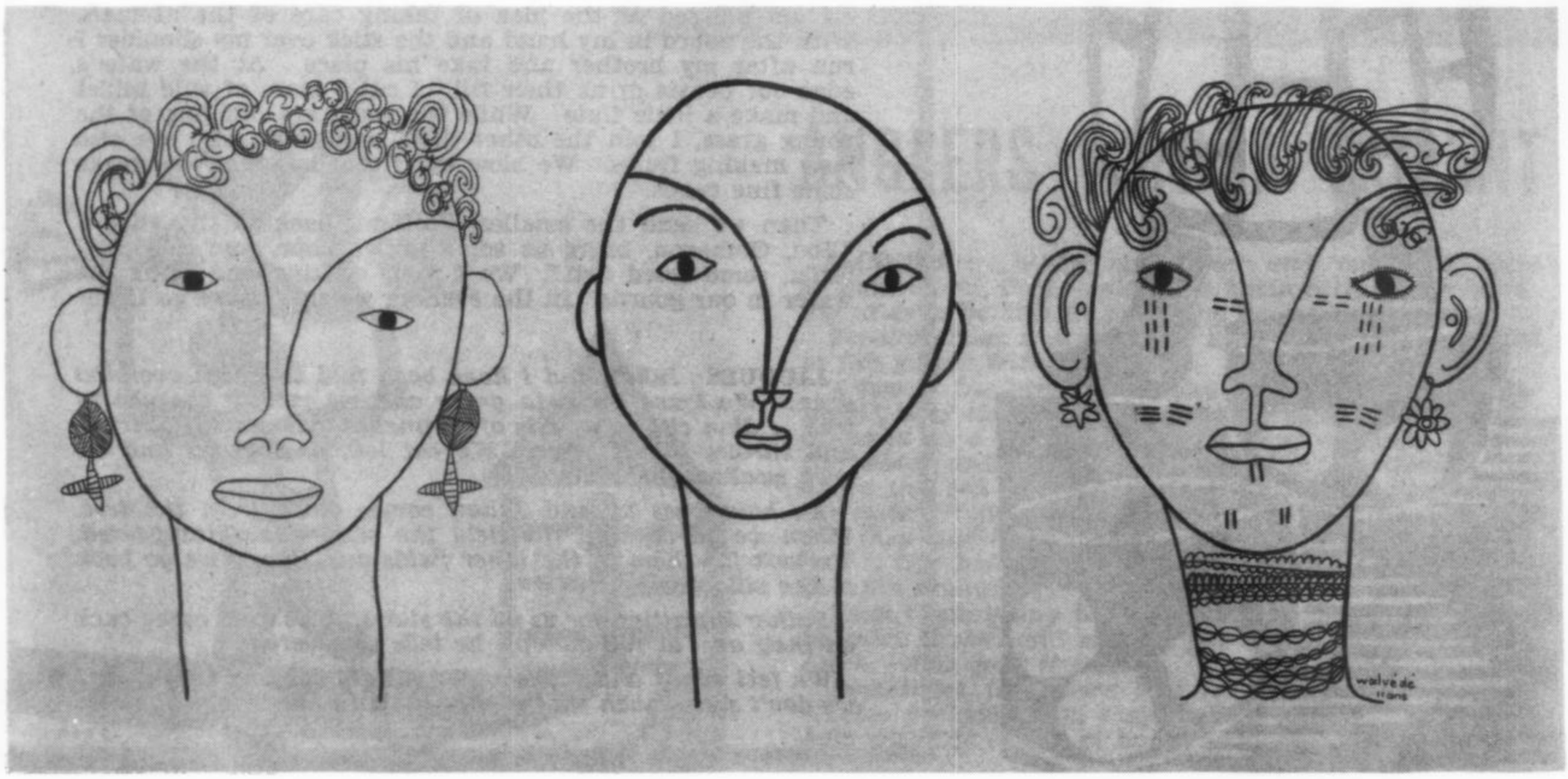
JACQUES' FRIENDS. — When I am 20 *I shall have a tractor and I shall use it to work the land. I shall plough up all the fields.* (Roger.)

— I shall be a hairdresser. I shall cut peoples' hair, beards that have grown too long and sometimes... an ear or two. (Paul.)

— Perhaps I shall be the Member of Parliament for my region. (Alphonse.)

— I shall be a postman. I shall go from house to house delivering letters, telegrams and parcels. (Antoine.)

PORTRAITS FROM PITOA. — All drawings on pages 4. to 13 are by children from the Pitoa school, Cameroons.



CHILD AESOPS OF THE CAMEROONS

THE CROCODILE AND THE BULLOCK

The bullock is thirsty and goes to the river to drink.

He goes into deep water. A crocodile seizes him by the hoof and pulls him towards the bottom. The bullock pulls hard too .

The crocodile is very strong. But so is the bullock. Who will win?

The bullock says to the crocodile: "Cayman !, just look at the sun."

While the crocodile is looking at the sun, the bullock gores him with his horn.

The bullock is the winner.

Dairou Issa (Tcholiré School)

THE HORSE AND THE DONKEY

The donkey goes into the horse's stable. He says to the horse:

"I'm stronger than you. Let's have a fight."

The donkey gives the horse a kick. The horse grabs the donkey's ears with his teeth and pulls hard.

Now all donkeys have long ears. They don't fight horses any more.

Isma, aged 10

THE FAWN AND THE FLY

The fawn and the fly lived together in the forest.

"Let's play at hide-and-seek", said the fly. "She who wins will be queen of the forest. You go and hide and I will look for you." Then the fly settled on the back of the fawn's head. The fawn hid herself inside a thick bush and called out: "Where am I?"

"There you are, there you are", cried the fly. "I've won. Now I will go and hide."

Then she flew back and settled again on the fawn's head. "Look for me," she called. The fawn looked everywhere, but never found the fly.

At the end of the day the fly came out from her hiding place and said:

"You never found me, so I am queen of the forest."

Richard Kamga (Gauganté School)

THE MOUSE AND THE BIRD

The mouse and the bird are friends. They decide to build a house in the bush. The mouse says to the bird: "You go and collect the wood and I'll go and fetch the grass."

While the mouse looks for the grass a snake catches it and eats it up. While the bird is fetching the wood a man catches it and gives it to his child to play with.

The mouse and the bird did not build their house. They are not even friends now. The mouse lives in the ground. The bird lives in the sky.

Hamadou Daboré, aged 9

THE CORMORANTS

One day I go with my mother to fetch water from the river.

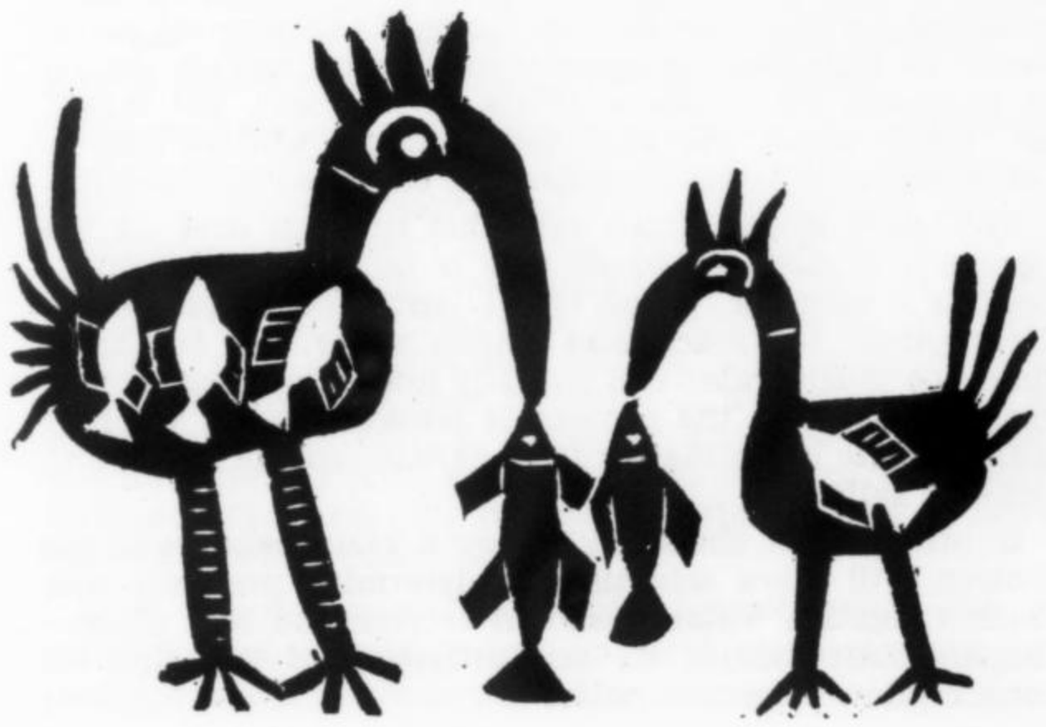
I see a cormorant fishing. I take a pebble and throw it at him.

The cormorant rises with a big fish in its beak. Then it flies along just skimming the water.

Another cormorant appears. He says to the first: "Wait for me." Then he dives into the water and comes up with a fish. He shares it with his friend.

When they have finished eating the fish, the two birds fly away, singing as they go.

Wabili, aged 9 (Pitoa School)



Texts on this page are taken from **Bibliothèque de l'Ecolier Africain,** published by Editions du Groupe Camerounais d'Education Moderne.

DESERT OR DELUGE AT THE FLICK OF A SWITCH

by Daniel Behrman

How do plants adapt themselves and survive during a torrid summer in the Sahara or a long spell of heavy rain in Provence. Scientists hope that they will soon learn the answers to some of the puzzling problems of plant behaviour from a special laboratory, an "ecotron" which is to be built at Montpellier in southern France.

By simply flicking over a switch they will be able to obtain precise data on plants growing in "climates" artificially created in the "ecotron" whose work will reinforce the offensive launched by science against some of the worst problems afflicting the world's arid zones—one third of its land surface.

Now in the planning stage with half its total budget of $1,200,000 already alloted, the ecotron will be the newest chapter in the four-centuries-old history of Montpellier as a hothouse of botany. It will be the laboratory of the University of Montpellier's Institute of Botany, headed by Prof. Louis Emberger.

Professor Emberger is one of the world's leading authorities on plant ecology—the study of relationships of plants to their environment—and it was he who christened the "ecotron." Part of its name comes from ecology and the other part from the cyclotrons used in nuclear physics. Appropriately enough, the ecotron will enable measurements of plant behaviour to be made with a precision usually associated with nuclear physics.

The Institute at Montpellier is already something of a mecca for scientists from countries in the world's dry belt who study there under UNESCO fellowships enabling them to specialize in plant ecology.

The "ecotron" will be a powerful weapon in the fight science is waging against aridity and the misery it engenders for hundreds of millions. Here, a climate will not only be reproduced with its exact conditions of light, temperature and humidity (as ecologists themselves say, it would be ridiculous to spend more than a million dollars to duplicate what nature offers at no cost), but it will be "taken apart" so that the ecologist will be able to learn which of these conditions is essential to plant life.

The plant scientist can turn his findings over to the agricultural engineer whose task is to raise food production. For example, if soil is over-irrigated a plant often "transpires" too much and wastes water. At the same time, too much water can actually lower its absorption of carbon dioxide in the process of photosynthesis, whereby plants create living matter from carbon dioxide, water and mineral salts.

In other words, the study of how a plant behaves in the ecotron will allow scientists to determine precisely how much irrigation water it should receive and how often—thereby both raising its productivity and reducing its consumption of scarce water.

How will these studies be carried out? Recently, we had an opportunity to take a tour of the Montpellier ecotron—on paper, of course—with Profesor Emberger and Dr. Frode E. Eckardt, who is in charge of its construction.

Once it is completed as a wing of the brand-new building of the Institute of Botany, the ecotron will outwardly be a long, low construction of abstract, zigzag design in the shade of the ancient trees of Montpellier's botanical gardens, founded in 1593.

Inwardly, it will be a world of its own, so much so that its staff will have to pass through an "airlock" to go to work. In special rooms, research workers will change their clothes, shower, and then put on sterile smocks and, for certain tasks, gloves and boots. The purpose of these precautions is to prevent the introduction of insects and viruses from the outside world into the ecotron.

The heart of the ecotron will be its control room. Here, a single man with panels of switches and rheostats will be able to set the weather in the laboratory rooms. To be exact, he will mainly oversee the setting of the weather by automation. For example, it will be possible to take graphs of temperature, humidity and sunlight from recorders in, let's say, central Tunisia and then feed them into this electronic equipment which will reproduce the same conditions within a given room of the ecotron.

It may very well be one of four rooms in the laboratory's most highly automated section. There, an experimenter will be able to vary, at will, light, temperature and humidity, and the carbon dioxide content of the air. Like a stage manager, he will create a setting where plants can act their parts. In fact, the lights for these rooms are to be made by the same firm responsible for stage lighting in Paris theatres and for illuminating castles in the "sound and light shows" all over France.

Next to each room will be a small laboratory where readings can be taken without entering the room. This is extremely important because the mere presence of a human being in such an experiment can seriously modify its conditions.

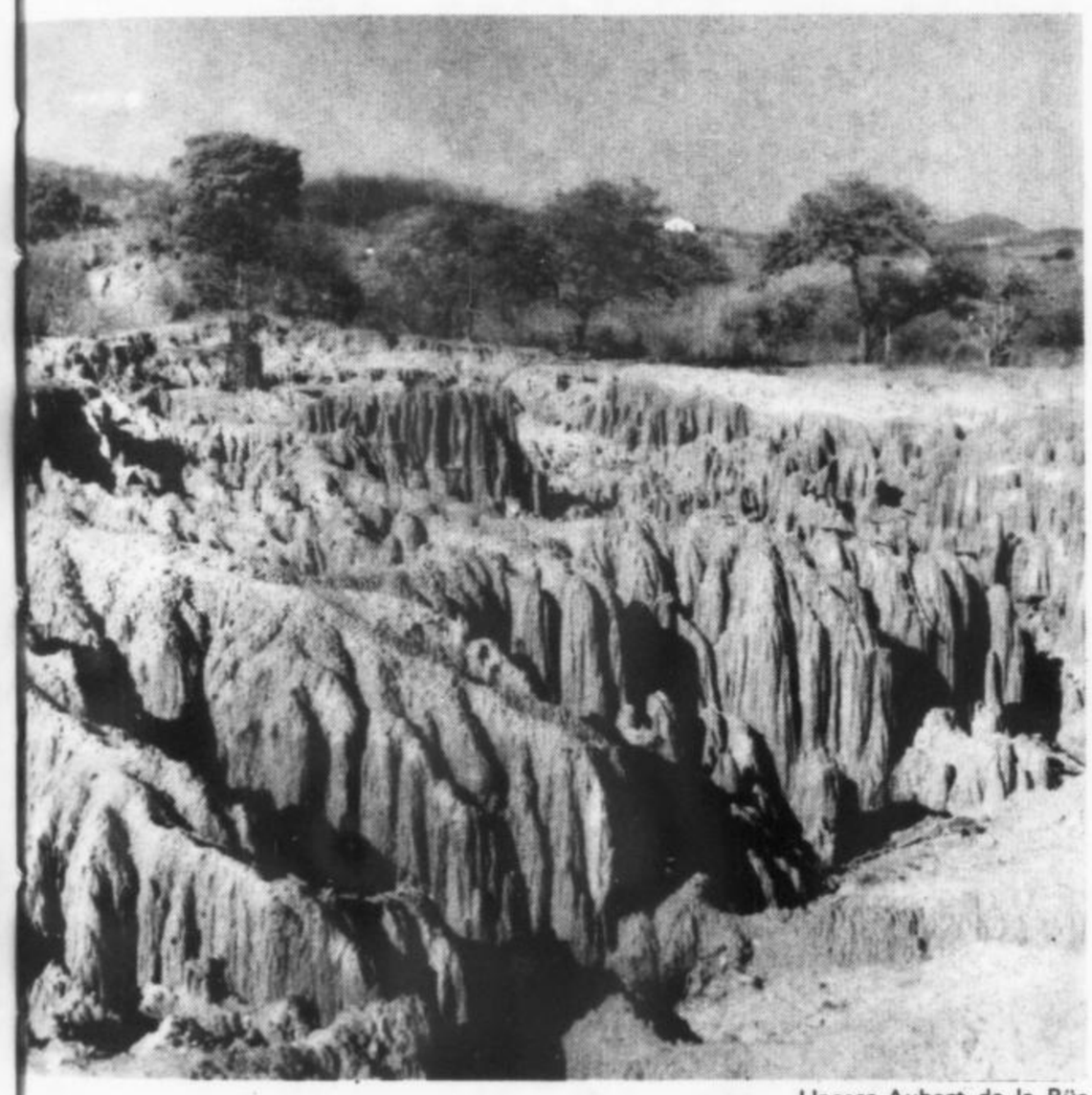
This is also one of the main respects in which Montpellier's ecotron will differ from "phytotrons" already in use in the United States, France, the Netherlands and the U.S.S.R. There, the growth of plants over a long-term period is studied in large rooms where the temperature is held constant. To observe how a plant reacts to a change in temperature, the experimenter wheels it into a different room kept at a different temperature. One of the objectives of the phytotron is to make a highly precise

study of the physiology of plants with a view towards raising yields. Experiments are often conducted on a large scale.

Montpellier is more concerned with such delicate processes as photosynthesis and transpiration and, in general, learning how plants react to changes in their environment. Smaller rooms, in which the climate can be varied, will be used.

Both in the phytotron and the ecotron, botany is emerging from what might be called its "hand craftsmanhip" stage. The scientist will be freed from such chores as hourly readings which will be registered and co-ordinated automatically. At the same time, the ecotron's electronic brain will "remember" experiments on perforated tape and will be able to duplicate them at any time.

The ecotron will also include a cold room where temperatures as low as 5°F can be created, and four greenhouse rooms where plants will "perform" under natural light while other conditions are varied. Temperatures in these rooms will be controlled: in the hottest of the four, they will be "Saharan." In another room, plants will be subjected to small doses of radioactivity.



Unesco-Aubert de la Rüe

The world's arid zones cover one-third of its land surface. Not all of this area is as badly afflicted as this wasteland in Latin America — due to total erosion of the soil following excessive deforestation and bad agricultural practices. Today, science has taken the offensive against some of the worst problems of the arid zones, aided by research carried out in specialized laboratories like Montpellier's Institute of Botany.

ALL this will take place only a few hundred yards away from what Professor Emberger calls "the birthplace of plant ecology." Opposite the institute in the botanical gardens stands "La Montagne" created by Richer de Belleval, the 16th century founder of the gardens. The "mountain" is a ridge about 100 yards long and 5 yards high, running from East to West. On its southern slope, Richer de Belleval planted sunloving Mediterranean vegetation which thrives in dry soil. On its shady northern slope, the pioneer introduced more northern varieties.

Today, the rest is almost hallucinating. One side of the tiny ridge is a Provençal hillside with perfumed rosemary, spurge and other low sturdy plants baking in the sun. The other is a thick forest, mysterious and romantic with ivy winding around massive trunks.

That was the beginning of botany in Montpellier during the reign of good King Henri IV who wanted every Frenchman to have a chicken in his cooking pot. Since then, Richer be Belleval's successors have reigned there in unbroken line down to Louis Emberger. The list is studded with the greats of botany. Here, in the early 18th century, Pierre Magnol (who gave his name to the magnolia) held the chair of botany. Here, Augustin Pyramus de Candolle pioneered a new system of plant classification in the early 19th century and planted a garden still piously preserved in its original form. Another great link in this chain of botanists was Charles Flahault who died in 1945 at the age of 84.

Professor Emberger, the present head, has been fighting for his ideas almost since the day when he first became interested in botany as a child in his native Alsace. He once wrote : "Often we are asked about the usefulness of an institute of botany in the atomic age. The fact is that plants have the power to make a synthesis of life. Then do they not have anything to teach us? We go into ecstasy over the power of the atom but plants have the power of life."

To help scientists from countries in the arid zone itself to read the story of vegetation, UNESCO has been offering a series of fellowships in plant ecology at Montpellier.

Recently, a group of six young scientists made the pilgrimage to Montpellier from Iran, Iraq, Jordan, Morocco, the Sudan and Turkey, and fellowships are now being awarded to eight more for a two-year course. When we visited Montpellier, four of the first group had already completed their stays in which they worked in plant ecology, including mapping, for periods running from nine to eighteen months. Their fellowships also covered stays at a leading soil science laboratory near Paris.

But we did have an opportunity to meet two UNESCO fellows who had stayed in Montpellier for intensive study, Dr. Ali Zargàri of Iran and Mr. Elmi Taher Amireh of Jordan.

Dr. Zargari is a professor of botany at the Higher Teacher Training College of the University of Teheran and director of the herbarium at Iran's arid zone research institute. At forty, he is also the author of a three-volume work on Iranian medicinal plants which has been honoured by a royal prize in Teheran.

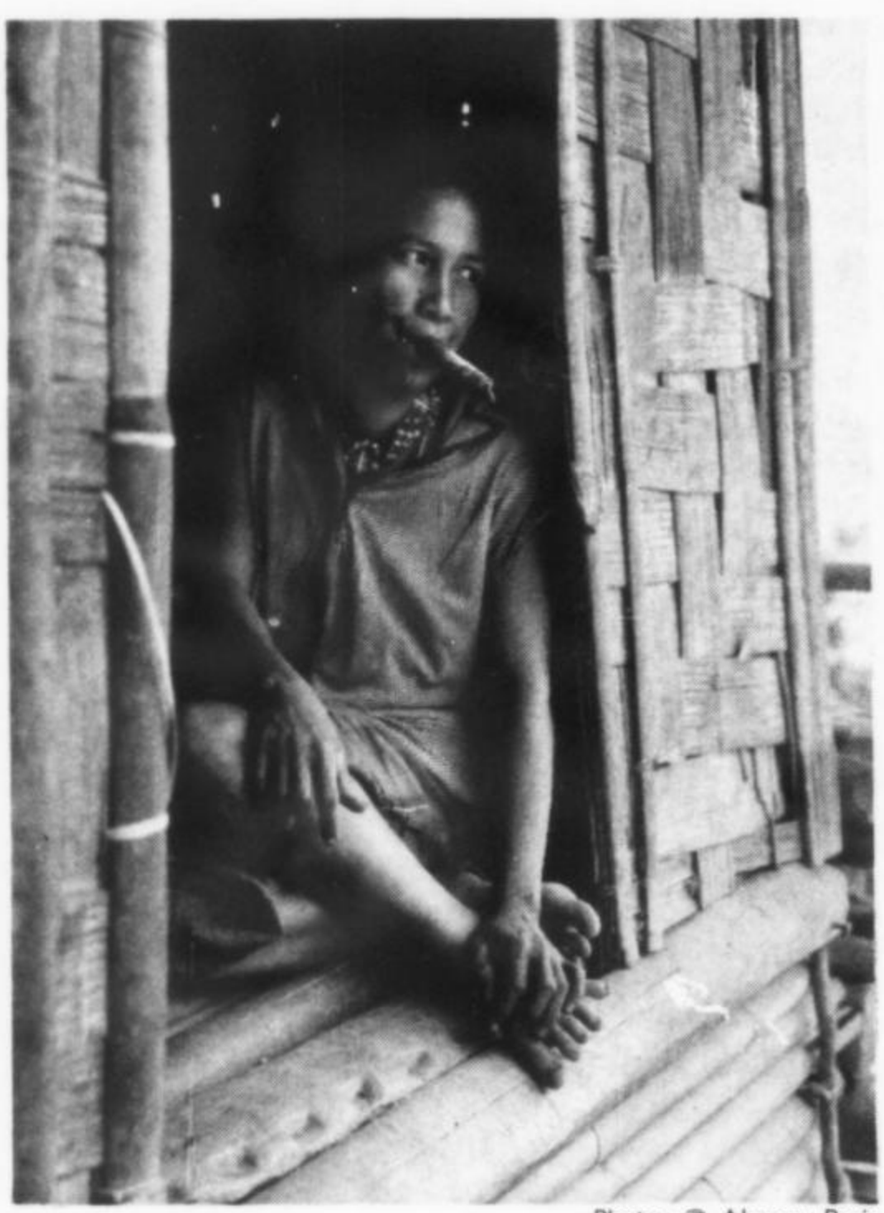
His work at Montpellier, he told us, has changed his own viewpoint from that of the "pure botanist" collecting specimens to that of the ecologist, who is interested in soil and weather as well as in species of plants. In this respect, ecology sums up rather happily the goal of UNESCO's arid zone programme, to unite various branches of science into a common front against the desert.

Mr. Amireh told us he was an inspector of horticulture in Amman. At Montpellier he is studying the water economy of *Quercus coccifera,* the hardy kermes oak of Languedoc. On sunny days, he gets up at 4 a.m. to be at his testing station twelve miles outside the city in the maquis by sunrise. There he measures the plant's evaporation and transpiration, cutting off a sample every fifteen minutes and then weighing it five or six times at intervals of one minute. This is repeated at fifteen-minute intervals until sundown when Mr. Amireh returns to Montpellier and puts his sample into an oven to learn its weight when completely dry.

Upon his return to Jordan, Mr. Amireh would like to attempt similar experiments on local plants to find out just how much precious water they consume.

THE STAIRWAY OF THE GIANTS

by Paul Almasy



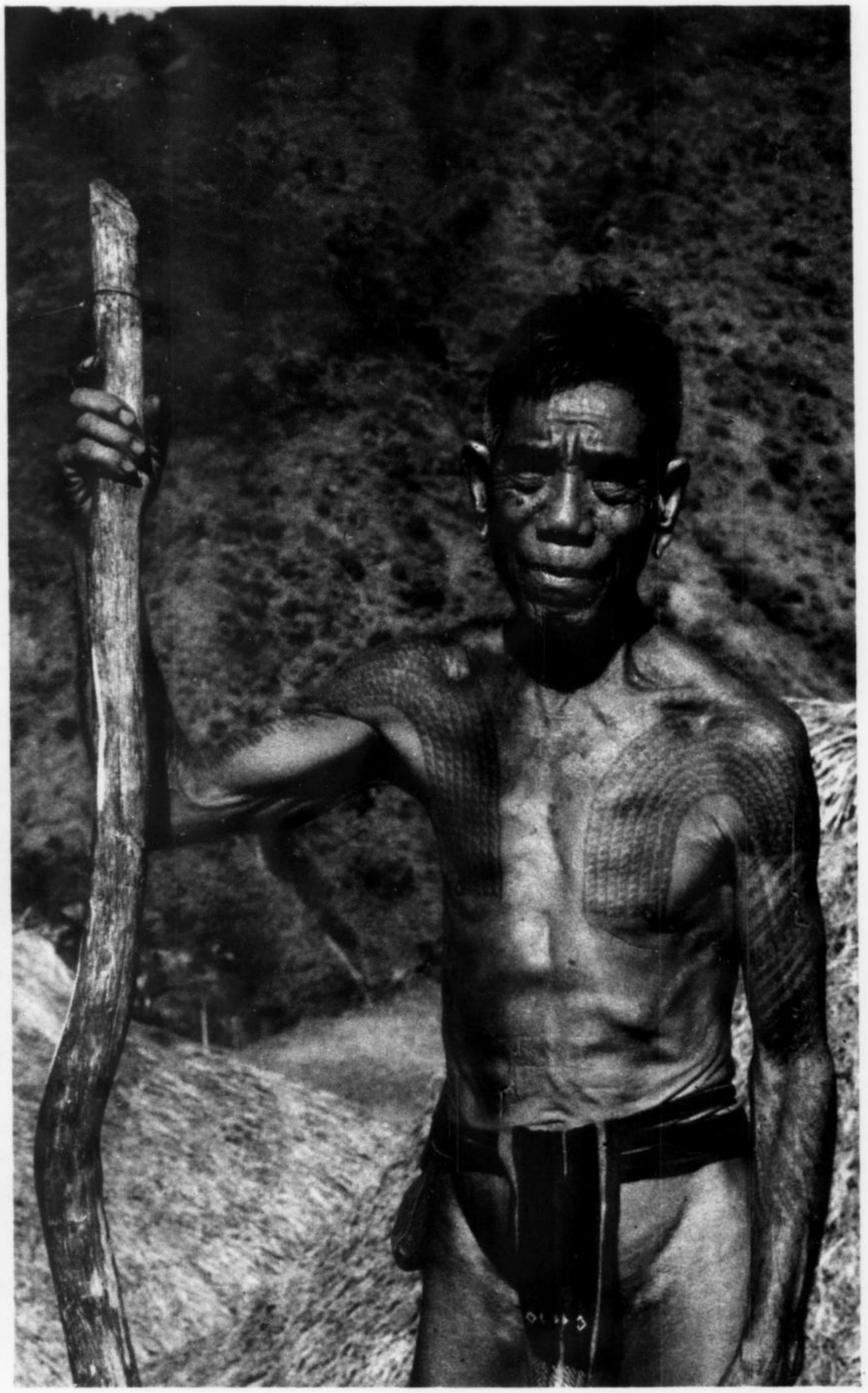
Photos © Almasy, Paris

Some 2,000 years ago, the tribes of the Upper Bontok Valley on the Philippines' island of Luzon completely transformed their wild mountain fastnesses by a grandiose feat of agricultural engineering. Taking between 1,500 and 2,000 years to do so, they had terraced the mountainsides into a series of ricefields that look (above right) like a stairway for giants. To retain these narrow fields they built some 15,000 miles of high stone walls and laid down innumerable bamboo pipes to irrigate the rice. Tattooed on arms and chest, peasant (opposite page) is a descendant of the men who built these innumerable terraces. These mountain-dwellers, men and women alike, smoke cigars made from homegrown tobacco. Above, housewife relaxes with cigar of Churchillian dimensions.

IN diverse lands and throughout history man, the settler and the farmer, has often challenged a hostile Nature, transforming desert, jungle or steppe to draw his sustenance from the soil. Yet rarely has he ever changed a landscape as profoundly as in the Bontok Valley on the Philippines' island of Luzon.

Here, in the heart of a wild mountain range, the famous terraced ricefields of the Ifugaos, spreading over several hundred square miles, are a green and living testament to the ingenuity of this people in devising agricultural techniques—a masterpiece of human patience and endurance.

Describing this region is impossible—only pictures can give an idea of the scope of this achievement—one of history's most remarkable examples of agricultural development. In the Banaue Valley alone, terraces cover 400 square kilometres and the walls supporting them total



some 15,000 miles in length. Archæologists and historians who have studied the Bontok ricefields estimate that the islanders must have worked from 1,500 to 2,000 years to build the terraces and their systems of irrigation. There are terraced ricefields in China, Japan and Indonesia, but these ricefields of the Ifugaos in the Luzon mountains are by far the biggest in the world, with the highest and the best-constructed stone walls.

It is believed that a small tribe which emigrated from Indonesia taught the Ifugaos how to construct ricefields in terraces. This must have happened some 4,000 years ago. Remains studied by specialists suggest that the Upper Bontok Valley took on its present-day aspect only at the beginning of the Christian era.

We know very little about the Ifugaos who, 4,000 years ago, took on this gigantic task which the people of the Philippines call the "eighth wonder of the world." They probably came from the Asian mainland and they reached Luzon while seeking a new land in which to settle or after fleeing from a powerful enemy.

Today, the Upper Bontok Valley and the neighbouring valleys are inhabited by various tribes, one of them still known as the "Ifugaos." Their neighbours are the Bontoks and the Kalingas. All these mountaineers are exceptionally gifted farmers and they maintain the terraces of their ancestors with great technical skill. They are continually improving irrigation systems and ways of growing rice and raising livestock (their two main occupations).

There is no better proof of their ingenuity than the scarecrows they construct to protect their seeds from the birds. These scarecrows resemble those found in other lands, but are kept perpetually moving, operated by the brooks and the many little streams in the region. A mechanism as ingenious as it is simple transmits the energy of the streams to the scarecrows through a system

CON'D ON NEXT PAGE

STAIRWAY OF THE GIANTS *(Continued)*

of cords. In some cases, the moving scarecrows may be as far as 800 yards from the water.

While the Kalinga ricefields are not as spectacular as those of the Ifugaos and the Bontoks, they are also remarkably well maintained. The homes and villages of these mountaineers are among the cleanest and best kept in the world. Yet it is not uncommon to hear certain city-dwellers refer to these tribesmen as "savages." It is a pejorative and unjustified label for people who are among Asia's most highly skilled farmers and who have been able to create and to preserve such gigantic works of engineering.

Its origin may lie in the fact that for centuries, Kalingas, Bontoks, Ifugaos and other tribes were perpetually at war and, as a sign of victory, the men returned to their villages with the heads of enemies slain in battle. This gave them the name of head-hunters. However barbarous a custom it may have been, it certainly was not unique in the annals of warfare and it has been abandoned for many years.

It is even said that the introduction of baseball and football among the Luzon mountaineers broke them of their habit of collecting heads. This seems to correspond to the theory of an American administrator of fifty years ago who wrote that head-hunting was not always an integral part of tribal warfare but, more often, a sport where two rival teams deliberately accepted the supreme risks of this combat. At the end of the "match", heads were counted in the same way as goals at a football match.

If these mountaineers are still called "primitives" and "savages" it may be because of the regrettable habit of certain "civilized" people in thus describing others who wear only a minimum amount of clothes. The farmers in the Upper Bontoc Valley have to work in extremely tough conditions under a blazing sun. They believe—and they are logically correct—that there is no need to wear trousers and shirts which could only hinder them in their work. But it is ridiculous to use the term "savages" in referring to peoples capable of such achievements.

Photos © Paul Almasy

CENTURIES OF PATIENT WORK went into the making of these ricefield terraces which climb up the mountainsides from the valley floors to heights of nearly 7,000 feet. Hardworking and skilful farmers, the mountain dwellers of Bontok are also expert masons—they need to be with literally thousands of miles of terrace walls to maintain. Kalinga village home (right) with its plaited facade testifies to their skill in yet another craft. Above right, with his bow and his axe, this young man of Bontok has a rather forbidding appearance. These mountain people are, in fact, very friendly and hospitable to strangers.

FINE ARTS ON POSTAGE STAMPS

by David J. Jacobs

WOMAN RETURNING FROM THE BATH IN THE RAIN. This work by Kiyonaga, is one of a series of woodcuts from the 18th century which now figure on Japanese stamps. The stamp shown here was issued in 1958.

FIGURES FROM ANDROMEDA. One of a set of stamps issued in Greece last year to commemorate the ancient Greek theatre. It reproduces vase decoration (4th century B.C.) now in Acropolis Museum, Athens.

REPAYING the tax on the delivery of a letter with a stamp wasn't even dreamed of when Raphael brushed into life his lovely Madonnas or when Goya etched his angry nightmares into seething commentaries on the ugliness of man. And yet, there, on tiny, gummed and perforated rectangles, are "The Sistine Madonna" in her magnificent calm and "Volaverunt", Plate 61 in the *Caprichos*, showing three crouching witches carrying the Duchess of Alba through the clouds in three different directions at once.

These are just two of the more than 1,100 paintings, prints and drawings that more than 125 governments have had translated into stamp designs. But why stop at painting? Sculpture, architecture, music, ceramics, printing, tribal carvings, weaving, the dance, theatre, literature—almost every form of art from antiquity to yesterday—has been represented on postage stamps from Aitutaki to the Virgin Islands.

More than 85 governments have issued about 500 stamps featuring ceramics. Thousands more have been based on sculpture—a Polynesian club, the "Charioteer From Delphi", an exquisite Ife bronze from Nigeria's Yorubaland, a head of Nefertiti or a detail from the work of the contemporary Yugoslav, Ivan Mestrovic. A history of architecture could be illustrated with postage stamps, from the cave (Lebanon issued a good example) to the skyscraper (the new York City skyline appears on a Monaco stamp).

The designers of the first postage stamps never dreamed of such subjects as an etching of Dürer's mother or a carving of the great Congo king, Shamba Bolongongo. But they did turn to the arts from the very beginning for their motifs. The portrait on Great Britain's Penny Black of 1840, the world's first adhesive postage stamp, was based on a carving of Queen Victoria's head designed by William Wyon for a medal struck in 1837. Another portrait of Victoria, by Alfred Edward Chalon, became the basis for many beautiful stamps among the early issues of Grenada, Queensland and New Zealand.

Some nations based the designs of their first stamps on the seals and stamps used on deeds, tax documents and other papers. These were simple ciphers, crests and other symbols. But most nations, following Britain's example, used portraits of the rulers. This was an outgrowth of the ancient practice of using the ruler's head on coins.

From the beginning, stamps have been manufactured by the makers of money. Early designs of the United States, for instance, were produced by engravers employed by banknote printers. They used portraits of Franklin and Washington which had appeared on notes printed by the same firm. It was not long before the designers went beyond the portrait. In 1869, the United States issued stamps based on historical paintings such as Vanderlyn's "Landing of Columbus" and Trumbull's "Declaration of Independence".

And so it is with other nations. As the 19th Century ended and the 20th began, they were drawing more and more on their artistic riches. In 1896, Greece issued a set which included Praxiteles' "Hermes", Paeonius' "Victory", Myron's "Discobolus", and a view of the Acropolis and Parthenon. In 1905, Spain commemorated the 300th

CONT'D ON PAGE 23

REMBRANDT MAGNIFIED

The remarkable delicacy and detail of a postage stamp version of Rembrandt's "Persian Wearing Fur Cap "is revealed by the enlargement, above. Stamp itself, (right) is one of a set showing details of some of this artist's etchings, issued in 1956 on his 350th birthday anniversary.

FINE ARTS ON STAMPS *(Continued)*

HOMAGE TO DA VINCI. "Lady with the Ermine" was engraved by a Polish artist from Leonardo da Vinci's painting. It is one of a number of stamps issued in 1956 to publicise Unesco's International Museum Week.

ETCHINGS BY DURER. These works by the great German, painter, engraver and designer, Albrecht Dürer—praying hands and his mother—were issued by the Saar in 1955. The remarkable precision of the originals has been carefully preserved.

A GOYA SELECTION. In 1958 a set of Spanish stamps was issued depicting the works of Goya. Shown here are "El Pelele" and "The Drinker", two of the genre works now in the Prado Museum collection, Madrid.

THREE FACES OF VAN GOGH. Two Dutch engravers and one from France used differing styles to interpret a Van Gogh self-portrait Yet in transposing the painting, all three have faithfully reproduced the haunted look which Vincent Van Gogh gave to his own features.

THE CRAFTSMEN. The Tunisian postal service chose crafts as the theme for a series of stamps representing embroiderers, weavers and potters. This one shows the weavers at work.

AN IMPRESSIONIST
Ogata Korin, one of Japan's most famous artists, is honoured by this Soviet stamp issued in 1959, showing a detail of one of his paintings. This 17th century artist broke with tradition and developed a style distinctive by its bold impressionism, both in painting and in the decoration of lacquer.

WORK AND DETAIL. Czechoslovakia has honoured through its stamps the painter Josef Manes, celebrated for his historical and genre works. In 1936 a stamp for aid to children reproduced Manes' "Infancy," showing a midwife presenting a newborn baby to its father. Left, the complete work; right, a detail.

anniversary of the publication of "Don Quixote" by issuing ten stamps, each based on an illustration by Gustave Doré of a different episode of the story.

The first stamps of Egypt in 1866, then under Turkish suzerainty, showed Turkish inscriptions, but the paper was watermarked with a pyramid. The next year the Sphinx and pyramids appeared as the central motif. By 1914, Egypt was displaying the Colossi of Thebes, the Pylon of Karnak and the Rock Temples of Abu Simbel.

Over the years, the postage stamp has assumed additional functions, quite apart from the prepayment of a tax. It commemorates national events, it raises funds for charity and it disseminates propaganda. The designers have found the arts a natural—and rich—reservoir of ideas. And many governments have found this tapping of the national heritage a thrifty way of broadcasting to the world a desirable cultural image.

The hobby of stamp collecting, as old as stamps, has also tended to influence stamp design. Few products of the graphic arts are scrutinized so carefully by so many critical eyes. Advertisements, book and magazine formats, money, tax forms and thousands of other familiar pieces of printed paper—from menus to market bags—are, in a sense, invisible. We are influenced by them, we read them, we spend them, we carry home the fish in them, but few of us are conscious of how they are constructed and decorated.

Well designed printing does not wish to call attention to itself. The message is paramount, the messenger unseen. Of course this is true, too, of stamps. To many, they are just colored blurs on the corners of envelopes. But millions of collectors the world over study them in great detail, often preferring stamps that haven't even performed their function because the cancellations obscure some of these details.

A MAGNIFYING glass is a basic tool and the catalogues are full of blown-up illustrations of minute changes in line, shade or design. Many collectors are concerned primarily with studying perforations, watermarks, paper, gum, ink and printing varieties and pay little heed to design. Some are interested only in cancellations. But over the years there has been a growing sensitivity to the elements of design.

It is common practice for many nations to hold annual contests among artists to determine stamp designs. Some stamp journals run regular columns on the subject and one conducts an annual "Design Derby" in which thousands of readers vote for the most beautiful and the most ugly stamps produced each year.

This intense interest in what appears on the face of a stamp has been even further stimulated by the increasing popularity of "topical" or "thematic" collecting in which stamps are collected by subject, rather than by country or some other conventional discipline. The topicalist chases after butterflies, maps, railroads, ships, waterfalls, flowers, doctors, dogs, fish, poets, mathematicians, nudes or whatever else strikes his fancy and also appears on a sizeable number of postage stamps. About 300 of these topicalists from more than 20 countries have formed an organization known as the Fine Arts Unit of the American Topical Association. The unit publishes a journal containing detailed and highly informed articles about works of art depicted on stamps.

Along with this widespread and critical awareness of stamps has evolved the peculiar art of stamp designing. Among the handful of steel engravers and the highly skilled photographers, retouchers, etchers and other technicians are the men who have established stamp design as the rebirth, on a mass level, of the art of the miniaturist. They work from designs created for the stamp or from motifs that were created for other purposes but are now being used as the theme or a stamp.

The objective is not to reproduce the original, but to translate it—not just into another language, but into another medium. It is like rendering Dante's "Inferno" into a comic strip in a Chicago newspaper while still retaining a suggestion of the spirit of the original. The

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HOMAGE TO THE PRINCE

In 1942, Liechtenstein, one of the smallest independent states in Europe (with San Marino and Monaco) issued a series of stamps to commemorate the separation of its territory from these of the Counts of Montfort, six centuries earlier. Details of one of these stamps, " Homage to the Prince ", in magnification (above) reveal stamp engraver's remarkable skill, especially apparent in variety of facial expressions. Though Switzerland administers its telegraph and postal services, Liechtenstein has its own postage stamp issue.

TRIBUTE TO FRAGONARD. The celebrated French painter Jean-Honoré Fragonard has been honoured on stamps issued in Poland and France. In this reproduction of "The Letter," French engraver, J. Piel, has captured the grace with which Fragonard imbued his subjects.

original may have been a fresco from the *Cinquecento,* a triptych for an altar, a window on a mosque or a mask for a tribal chieftan. But the stamp design must be a vignette, usually in one or two colours, occasionally more, and it must share its tiny home with the country's name, the denomination and often, a descriptive legend. It is sometimes quite remarkable to see how these limitations are overcome—sometimes, even exploited—to produce not only a translation, but a nugget of graphic art with virtues of it own.

But to many the appeal of the design must remain secondary to the subject. To see the way the increasing number of issues based on works of art are grabbed up is to realize the everdeepening interest in the arts. As one collector, writing in the journal of the American Topical Association, put it :

> *"I never possessed either the means or the wall space to form a picture gallery in the proper sense. That is why my choice... fell upon "Pictures and Painters." Now I have an art gallery in miniature, embracing... a selection of the outstanding masterpieces enshrined in the world-famous collections of London, Paris, New York, Berlin, Vienna, Florence, Madrid and the like, all reduced to postage stamp size and displayed upon a hundred or so ordinary stamp album sheets... I have amassed, in about four years, rather more than a thousand different stamp pictures and the cry is 'still they come!'..."*

Sculpture and Architecture, he wrote, will come next.

A CENTURY OF 'BLACK GOLD'

The gigantic oil industry which today keeps billions of wheels turning throughout the world and which, within a century, has changed the pattern of life and work for much of mankind, opening up many new fields of endeavour, sprang from very small beginnings in 1859. Yet, since then, something in the region of two million oil wells have been drilled, occasionally to as great a depth as four miles.

by W. H. Owens

USIS

The modern oil industry was born just one hundred years ago at Titusville, in Pennsylvania, U.S.A., where Edwin L. Drake sank the first well ever to be drilled for the purpose of finding oil. A strike was made at a depth of about 69 feet and oil gushed forth at the initial rate of eight to ten barrels a day.

ALTHOUGH the large-scale exploitation of crude oil is a fairly recent industrial development, the Earth's "black gold" has nevertheless been used by peoples in many different parts of the world for thousands of years. The Bible tells how pitch, or bitumen, was used for the waterproofing of Noah's Ark and the basket of the infant Moses. This pitch came from surface seepages of crude oil which were bitumenized by the weathering action of the sun and wind. The "eternal fires" around the shores of the Caspian Sea, which were the object of worship in ancient times, were simply oil and natural gas seepages which ignited as they reached the air.

Bitumen was an article of commerce in the Tigris and Euphrates river basin, which is now Iraq, in the days before Babylon was built. The Babylonians and Sumerians, like the Inca rulers of Peru, valued it as a building mortar. The Chinese used the same sticky, black substance in their shipbuilding trade to make vessels seaworthy, and as fuel in their salt works. Among the many purposes to which crude oil exudations were put by the Indian tribes of North America and Patagonia was for medicine and embrocations.

It is interesting to recall that only eleven years before Edwin Drake drilled his well, oil had been struck accidentally while borings for brine were being made along the Allegheny River in Pennsylvania. This "rock-oil" which contaminated the water was skimmed off and sold in chemists' shops as an embrocation for the relief of rheumatism, gout and similar ailments.

The rapid and continuous growth of the modern oil industry, and the dominant role it has assumed in world affairs in so comparatively short a time, is without any parallel in history. This growth has been most striking since the First World War. In 1914 world production of crude oil was 55 million tons. In 1938 it was 280 million tons. Last year's world output exceeded 900 million tons, and the demand is still growing.

That the present demand for oil is likely to be doubled within the next twenty years is hardly surprising. Besides the daily increase in the millions of motor vehicles (which now consume more than one-third of the world's supply of petroleum products) and the enormous growth of aviation, there is the rapid spread of industrialization and the change to mechanized agriculture throughout the world. And now the young, but potentially vast, petroleum chemical industry is producing the raw materials from which synthetic fibres, synthetic rubber, plastics, resins, carbon black and fertilizers are made—materials, in turn, of a wide range of consumer goods.

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This is why, in spite of the huge output of the world's producing oil wells, the search for new sources of crude oil is being steadily intensified. Geological teams are scattered far and wide hunting for oil—in Arctic Canada and Alaska, in the steaming jungles of Latin-America and the Far East, in the Australian Bush and on the burning sands of the Sahara Desert. Exploration for more under-water oil is in progress too. There are incalculable quantities of this sub-ocean oil to be won under the relatively shallow waters of the Continental Shelf, large areas of which adjoin some of the richest producing oilfields, notably in the Gulf of Mexico.

While oil is produced on a commercial scale in a large number of countries, there are five main regions in which the chief proven oil reserves of the world are contained. These are North America, the Caribbean, the Middle East, the U.S.S.R. and the Far East. The bulk of world production comes from what have been aptly termed the two "Petroleum Poles." One is situated around the Caribbean and the Gulf of Mexico; the other about the Black Sea, the Caspian and the Persian Gulf.

THE United States, which is the most highly developed country so far as oil is concerned, is still the world's chief producer. In the past hundred years, the U.S. alone has provided some sixty per cent of the world's total cumulative production, and except for a brief period around the beginning of this century when the Baku oilfields of Russia had the largest output, she has always remained in the lead. Today, in spite of the growing production of other countries, the U.S. produces more than two-fifths of world's total supply. More than half the forty-eight States are oil producers, and in 1957 just two of them, Texas and California, together supplied more oil than the combined output of the Middle East and Far East.

Venezuela is the world's second largest oil producer and by far the largest oil-exporting country today. She still accounts for about ninety per cent of South America's oil production, although the other countries of that potentially rich continent—and also some in Central America—have recently become the scene of widespread exploration for the mineral.

Lake Maracaibo, the great sea inlet of Western Venezuela, is one of the most successful areas of under-water drilling. Very prolific oilfields are worked around the Lake shores, and in places these extend beneath its bed where the oil is recovered by means of under-water drilling from special platforms mounted on concrete piles. Some of the drilling rigs are several miles out from the shore and stand in water up to 100 feet deep. Offshore drilling has also been carried on for many years in the Gulf of Mexico, where the rich oil-bearing formations of the States of Texas and Louisiana stretch beyond the coast swamps far under the sea.

Third place among the world's oil-producing countries is held by the U.S.S.R. whose output of crude oil has been rising rapidly and continuously ever since 1945. A year ago Mr. Khrushchev announced long-term plans for a huge production increase from the record 98.3 million tons in 1957 to around 400 million tons by 1972. This would be achieved mainly, though by no means exclusively, through the further development of the rich reserves of the Volga-Ural region.

Russia's oldest oilfield is centred on Baku, on the Caspian Sea, which is perhaps the earliest known oil area in the world. But since the Second World War the Caucasian production has been steadily supplanted by that of the immensely rich region between the River Volga and the Ural Mountains, which, it is believed, may contain as much as eighty per cent of the total Soviet reserves.

LITTLE attempt was made to develop this so-called "Second Baku" field until the 1930's, owing to the remoteness of the region from the main oil-consuming districts of the western part of the Soviet Union. But development was stimulated by the wartime movement of many industrial plants into the area from the more vulnerable west. It will be the main centre of Soviet oil expansion in the future.

When it comes to proved oil reserves, the countries of the Middle East are in a dominant position with no less than two-thirds of the world's total. For this reason the Middle East will become more and more important as the years pass. Although its total output of crude oil is now more than ten times the pre-war level, the contribution of the Middle East to total world production (20 per cent in 1957) is still disproportionate to its enormous reserves. But this is expected to be doubled in the next decade.

It is in this fast-changing part of the world that some of the most remarkable oil developments of the present century have taken place. The first important oil discovery of modern times in the Middle East was made in 1908 at Masjid-i-Sulaiman, in Persia—a most prolific oilfield which has since produced over 100 million tons. That discovery stimulated the oil search in other parts, and in the years between the world wars new oilfields were found in Iraq, Bahrein, Saudi Arabia, Kuwait and Egypt, as well as in Iran itself.

Many of them are exceptionally prolific; for example, the Burgan oilfield in Kuwait now produces more than any other single oilfield in the world, and in Saudi Arabia the average production per well is several hundred times as great as, for example, in the U.S.A. where there are many large producing wells.

ONE of the great factors in oil production, especially in such a region as the Middle East, is the economic transportation of crude oil from the wells to the refineries and ports. The land pipeline systems, linked with the tanker fleets on the high seas, are the arteries through which this life-blood of our civilization is distributed.

Pipelines carry crude oil, and also refined petroleum products, over long distances and across rivers, mountains and deserts, and pipeline engineering is today a major activity of the oil industry. In the United States the pipeline transportation of liquid fuels and natural gas has reached the highest development, for in that country the entire oil movement from well to marketing terminal is often made wholly through linking pipelines.

Until about ten years ago the only direct outlet for Middle East oil to the Mediterranean was by means of the

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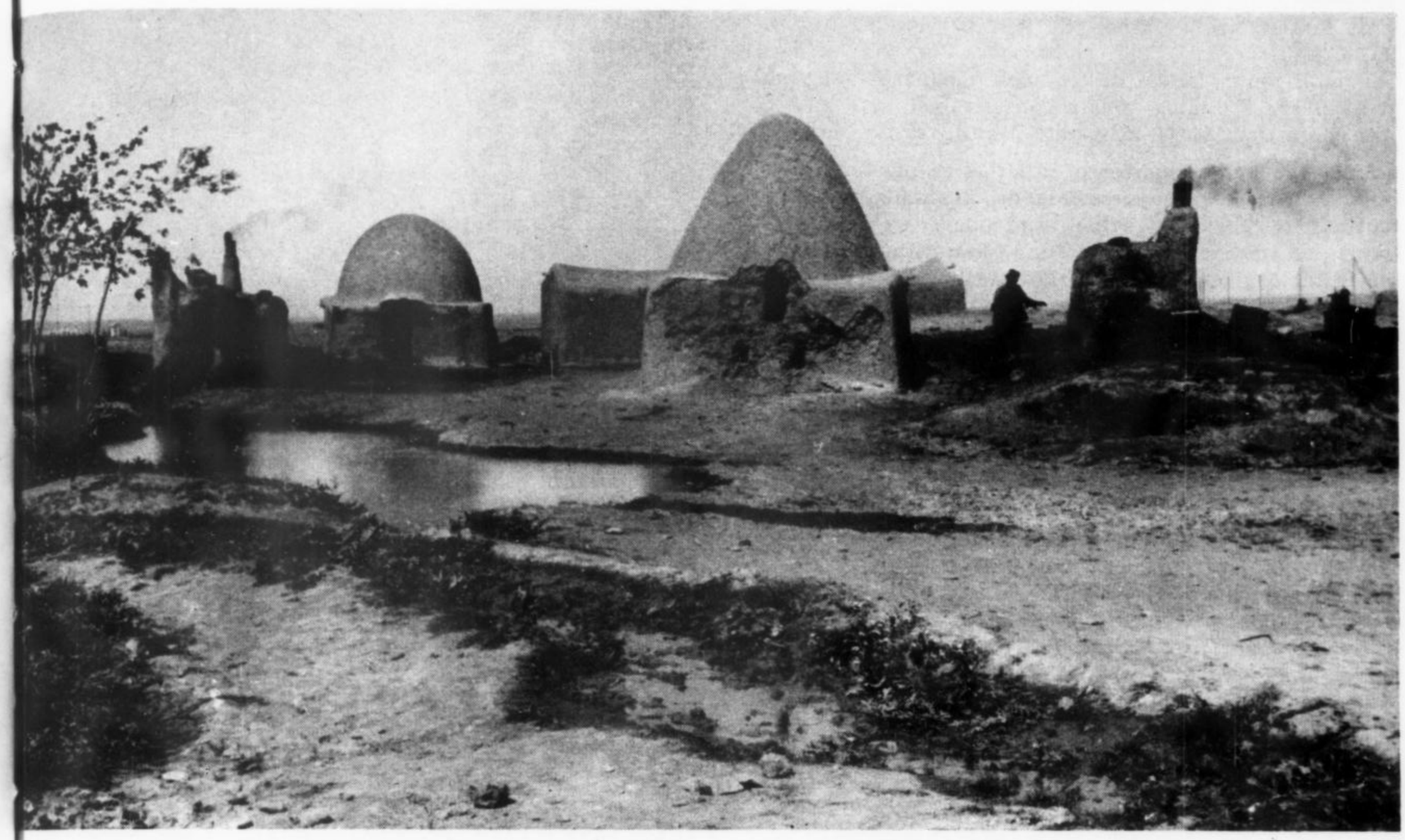
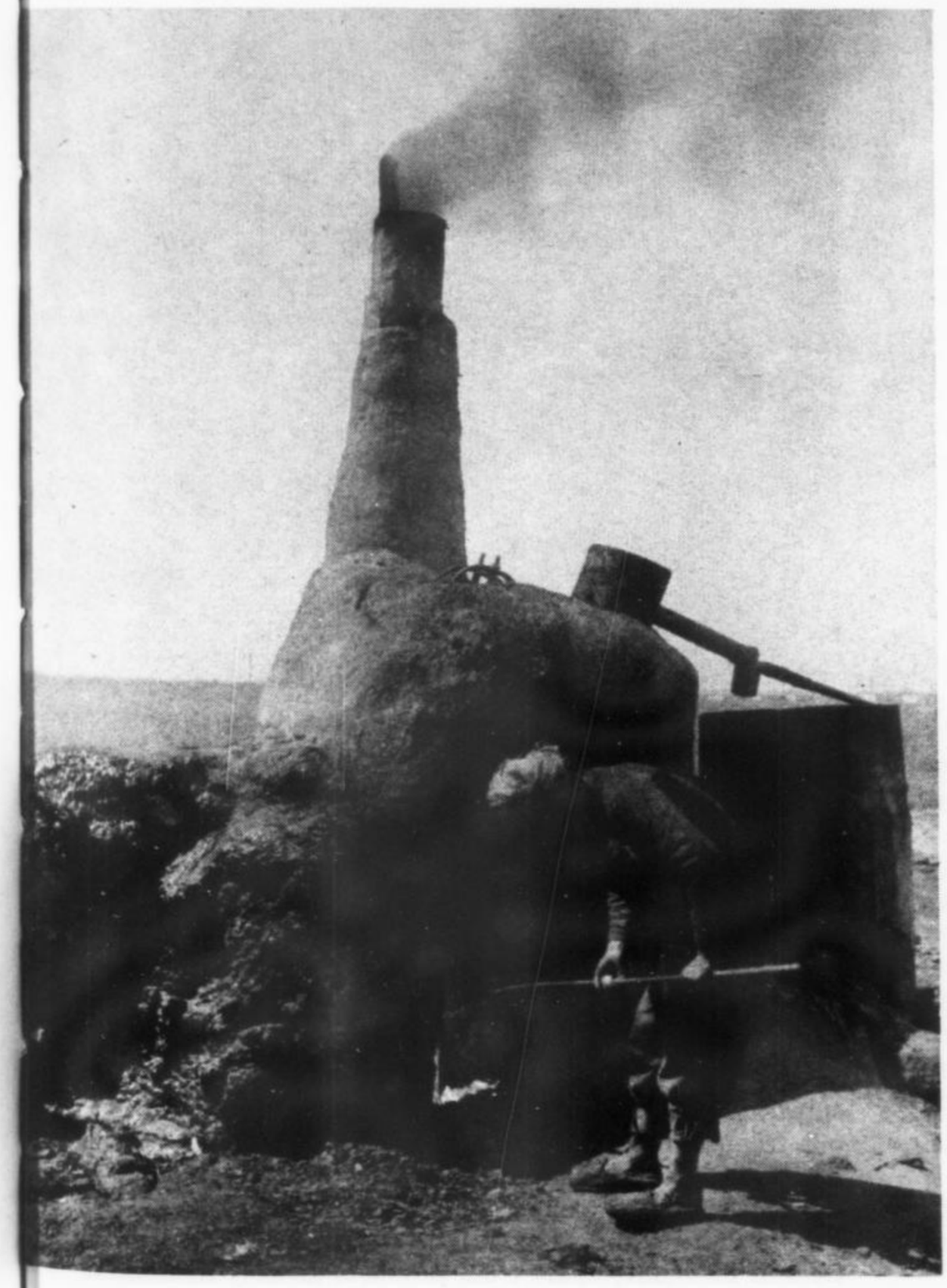
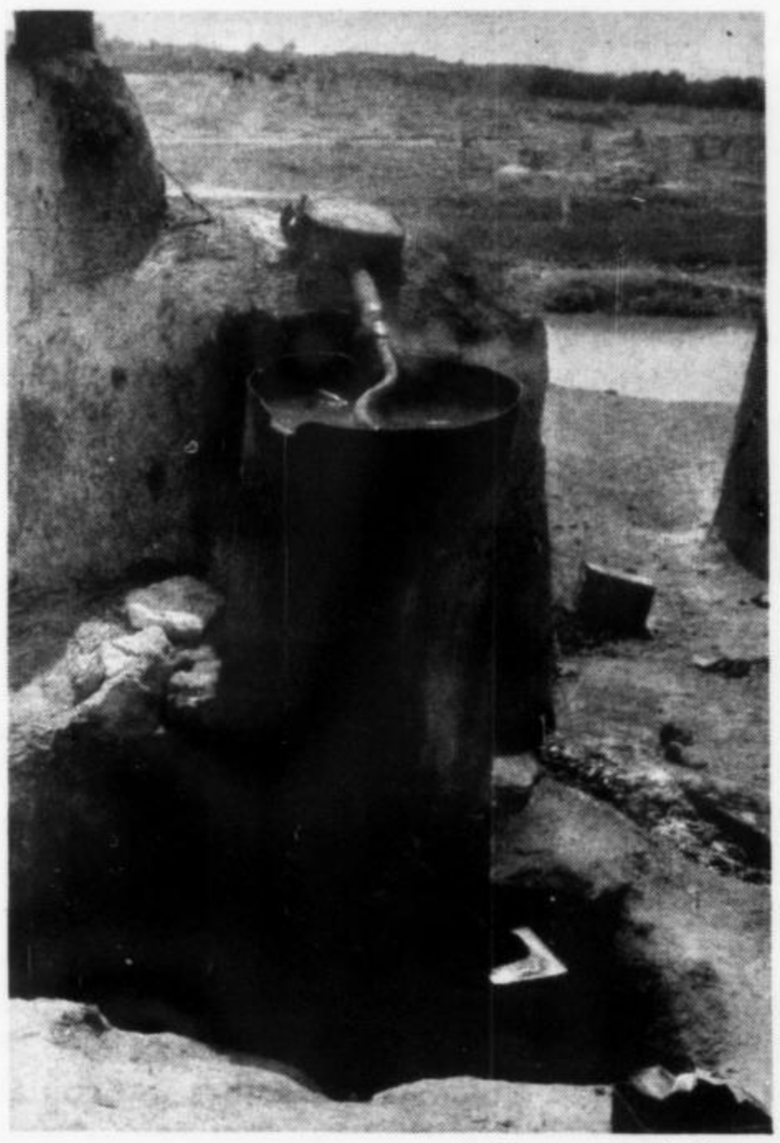


OLDEST OIL 'DISTILLERY'





Photos © Paul Almasy

Iraq, one of the largest oil-producing countries in the world is also the home of what might properly be called the world's oldest oil "distillery". Its owner—he is also its one-man staff—digs holes about six feet deep in the ground and taking from them the oil-soaked earth, he heats it in his home-made oven, and thus obtains a crude oil which he sells locally as lamp fuel. Petroleum, once called "rock oil", is not a new discovery. Two thousand five hundred years ago, Alexander the Great was greatly intrigued, when in this same region of Iraq, by the "eternal fires" which flared up day and night in the desert.

long, forked pipeline from the Kirkuk wells in Iraq to Haifa and Tripoli. The construction of this pioneer desert oil route—across desert, rock, mountain and four great rivers of Arabia—was a considerable feat. At one time more than 14,000 men were working on the project.

Since the war a number of other large pipelines have been built across the desert lands, including a second route from Kirkuk to Tripoli and one from Kirkuk to Banias, on the Syrian coast. The 1,000-mile pipeline from the Saudi Arabian oilfields to the Mediterranean port of Sidon, which cost about £80 million, plays a major part in supplying oil to Western Europe refineries.

Just how important these desert pipelines are can be seen by a comparison with the alternative of sea transport. To carry Middle East oil all the way to Europe by sea means a round trip of some 7,000 miles between the head of the Persian Gulf and the Mediterranean end of the Suez Canal, in addition to the voyage onward from there.

The world-wide movement of oil supplies involves the operation of large, modern tanker fleets. Today oil is the most valuable of all seaborne cargoes, and oil-tankers account for approximately one-quarter of the world's entire merchant fleet. On any average day of the year some 15 million tons of petroleum and its products, valued at well over £100 million, are afloat on the seas. At the beginning of this century there were only 109 tankers, representing a world tonnage of a little over half a million, in service. Today the number is more than 3,000—twice as many as before the Second World War—with a total tonnage approaching 50 millions.

SAFETY is naturally the most important factor in the operation of oil-tankers. In the earliest days of the oil industry, crude oil was shipped in wooden barrels, and this was a highly inflammable cargo for the wooden ships of the time. Oil is still a dangerous cargo to handle, but it is now carried in bulk and the risk of fire or explosion has been minimized both by the special design and the safety precautions taken in construction, and by a rigid system of rules which have to be observed by the crews. (The crew accommodation, incidentally, is among the best found in any merchant ship.) In case of any emergency the cargo compartments of the modern tanker are equipped with a steam-smothering system which operates effectively in a matter of seconds.

Everybody knows that petrol, gas oil, diesel oil, lubricating oils, kerosine (or paraffin), bitumen and so on are the products from refined petroleum. But today there are, in addition, more than a thousand products from the same raw material which have become part of everyday life, very often in unsuspected ways.

Among the most important of them are white oils which are highly purified grades of lubricating oils. These are used, for example, in the manufacture of popularly-priced cosmetics, perfumes, hair oil, sun-tan lotions, embrocations and ointments. Fruit such as oranges are thinly coated with white oil to prevent them drying up, and eggs are dipped in it to preserve them.

White oils are similarly used for the preservation of other foods, for example, cheese, meat and dried fruits. They also play a part in the manufacture of coloured inks, flaked soaps, polishes, and in the lubrication of bakery machinery to prevent bread from sticking to the rolling slabs.

Another group of petroleum products is the petroleum waxes, which are now used in a great number of industries. Candle-making is a well-known example. Cartons for milk and soft drinks, cake boxes and wrappings for bread and confectionery, are treated with paraffin wax, which is tasteless and odourless, to keep the contents fresh. Wax is also used in the manufacture of polishes of all kinds.

Other petroleum products include white spirit, which is used in paints and for dry cleaning, and special types of spirits used for extracting perfumes from flowers, natural oils from plants and seeds, and glue from bones. Carbon black—a fine powder manufactured from petroleum—is an ingredient of rubber tyres, typewriter ribbons and carbon papers, and printing and Indian inks. And in the field of medicine, apart from products already mentioned,

NIGHT SCENE at one of the largest petroleum chemical works in Britain, which produces a wide range of chemicals for use in industry, with a total output of 200,000 tons yearly.

British Hydrocarbon Chemicals Ltd., Grangemouth

petroleum supplies the solvents used in preparing such life-saving drugs as penicillin and insulin, and in anaesthetics.

It is in the past few years that the growing range of synthetic materials produced by the wonders of petroleum chemistry have begun to play an important part in our lives. A few substances like artificial silk, synthetic dyes and artificial fertilizers, of course, have been established for quite a time now. But the profusion of plastics, synthetic rubbers, detergents and so on, in the consumer market is a post-war development.

Today we know of such extremely versatile substances as polymerized ethylene, or polythene, and polyvinyl chloride which appear in so many everyday guises in homes, shops, offices and factories. Detergents, or soap substitutes, have revolutionized domestic washing and cleaning. A number of widely used synthetic fibres are also produced partly or wholly from petroleum, and also a variety of drugs and certain artificial flavourings. Indeed, the list is endless.

Yet this is really only the beginning. With one of the most fascinating and versatile raw materials in its hands, the oil industry is spending more time and more and more money on research. More and better plant, involving heavy capital investment, is being built to implement the new discoveries of the research teams in many lands.

Although it has achieved so much and bestowed such benefits on mankind in its first 100 years of existence, the modern oil industry embarks now on its second century in a youthful, pioneering spirit, confident of a future that promises still greater rewards.

© Almasy, Paris

Part of a bas relief decorating the temple dedicated to Knoum, god of the First Cataract of the Nile and to Sesostris III and founded by King Tuthmosis III (1504-1450 B.C.) at Semneh in the Sudan on the left bank of the Nile, about 250 miles up river from Aswan. Today, this temple is threatened with inundation by the Aswan Dam.

In the area of the northern Sudan which will be submerged by the waters of the new Aswan Dam, undoubtedly the most important sites which will be destroyed are the series of ancient fortresses built by the Egyptians about B.C. 2000 and situated at stretegic points on both banks of the Nile between Wadi Halfa and Semneh. The Pharaohs of the 12th Dynasty built these strongholds to protect the southern borders of Egypt and to hold down the subject populations of their newly conquered dominions in Nubia.

Some of them were also trading settlements and dispatch posts to Egypt of the products of the south, such as gold, ivory, etc. They are thus treasure houses of information, not only on ancient military architecture, but on the manners, customs and general conditions of life in colonial Nubia over a period of nearly a thousand years.

The exploration of these important remains of ancient civilization has been largely neglected because of their immense size and inaccessibility; consequently our knowledge of Egyptian military architecture is extremely limited. Egyptology is now faced with the necessity of immediate research in a subject which, unless undertaken at once, will be beyond the reach of a student in less than four years' time. Once the rising waters of the new reservoir reach their specified level of 133 metres, nothing can save these ancient monuments, and, built as they are of mud brick, within a few months not a vestige of them will remain.

With this knowledge, the Egypt Exploration Society in 1958 undertook, with the approval of the Sudan Government, the complete excavation of Buhen, situated on the west bank of the Nile opposite the modern town of Wadi Halfa. Buhen was the largest of the chain of trading stations and fortresses built by the Pharaohs of Dynasty 12 (2000 B.C.) to block the difficult passages by land and river through the Second Cataract.

It was the G.H.Q. for the administration of the military garrisons of all the strongholds in the area, and at the time of its foundation it was probably the seat of the Egyptian Viceroy who ruled Nubia in the name of the Pharaoh of Egypt. At that time the fortress consisted of an elaborate series of fortifications built on a rectangular plan 172 metres by 160 metres, which enclosed a town containing domestic habitations, barrack buildings, workshops, a temple and the Governor's palace.

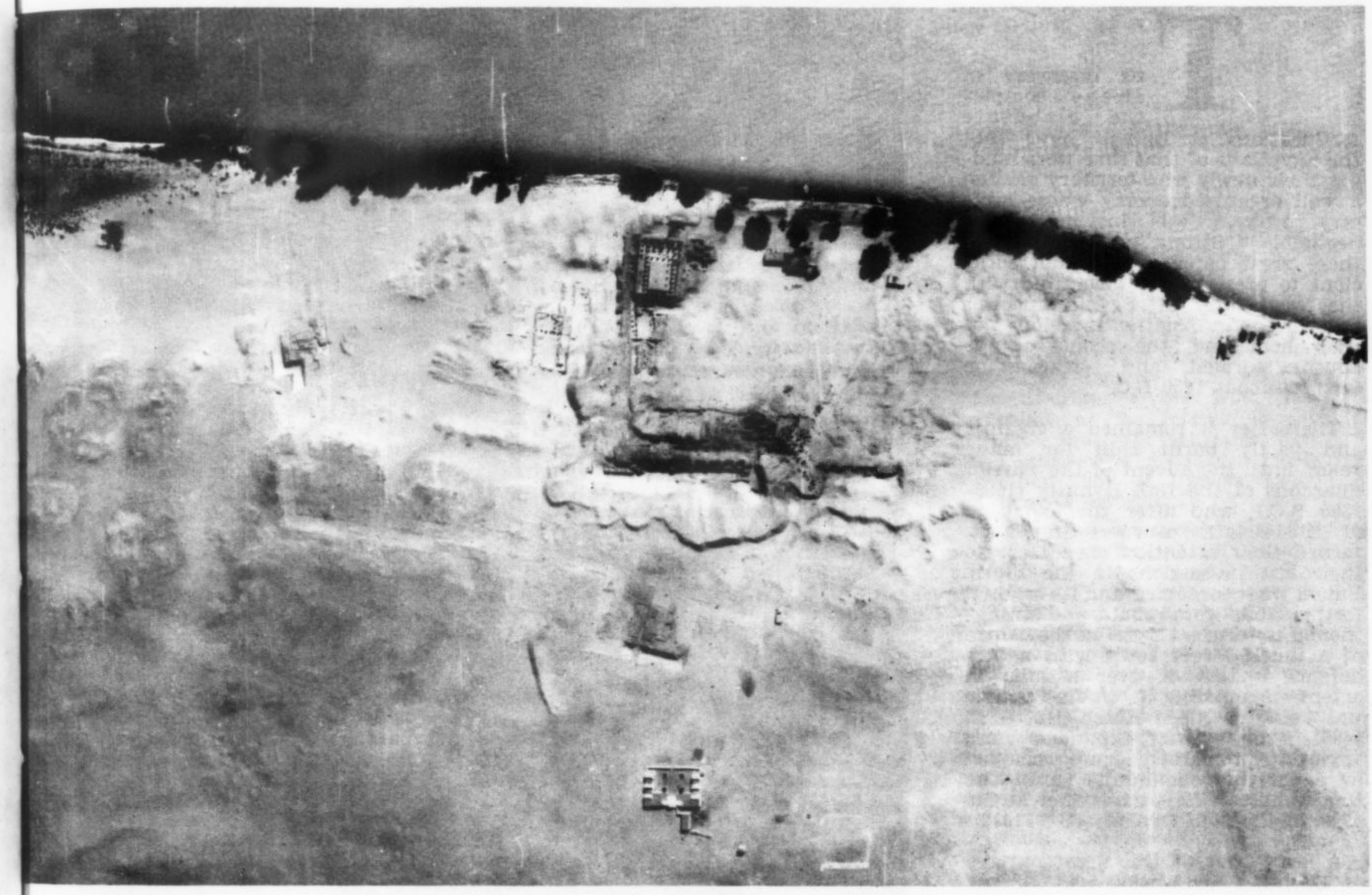
As far as the Egypt Exploration Society's excavations have gone, they have revealed a carefully laid out example of rectangular town planning with paved arterial roads, each with its own independent drainage system. On the river side of the fortress, two

IN THESE DREAR WASTES WHAT VISIONARY PASTS REVIVE...

by Professor W. B. Emery

Department of Egyptology
University College, London

J. Vercoutter



Aerial photo of the great fortress of Buhen, near Wadi Halfa in the Sudan. The fortress was built in the early Middle Kingdom, as one of a series of trading posts and strongholds erected nearly 4,000 years ago to defend the strategic area of the Second Cataract of the Nile, dividing Upper and Lower Nubia. It has been excavated and explored by expeditions led by Professor Walter B. Emery of the University of London. Among details seen in this photo are traces of streets running at right angles to each other, the earliest ramparts with their circular bastions, the temple (top centre, closest to the river) and the great gate in the centre of the west wall facing the desert. Faintly visible too are the outlines of the larger defence system dating from the reconstruction of the fortress, after its sacking about 1650 B.C.

great gates in the walls lead directly to stone built quays from which ships were loaded with the tribute and products of trade from conquered Nubia. The contents of tombs discovered outside the town and the condition of houses within it give ample evidence of a rich and even luxurious standard of living in this outpost of colonial Egypt.

The elaborate defence system which enclosed this small town consisted of a massive brick wall, 4.8 m. thick and 11 m. high, relieved at intervals on its outer face with projecting rectangular towers. At the foot of the wall was a brick paved rampart with a fire-step, protected by a loopholed parapet overhanging the scarp of dry ditch, about 9 m. wide and 7 m. deep. The counterscarp on the other side of the ditch was surmounted by a narrow covered way of brickwork, beyond which was a glacis rising from the natural ground level. Projecting into the ditch from the scarp were round bastions with a system of triple loopholes with single embrasures, through which archers could direct a deadly cross-fire which would completely cover the ditch.

The most strongly fortified part of the structure was the great gate built in the centre of the west wall facing the desert from which came the long trade roads leading to the mines and quarries. The gate was closed by great double doors, beyond which was a wooden drawbridge which could be

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pulled back on rollers. The gate and bridge were flanked by two spur walls which extended over the dry ditch, forming a narrow corridor, through which an attacking force would have to battle its way exposed to a rain of missiles from the battlements on three sides. Even when the storming party had broken through the gate, their difficulties would not be at an end, for they would find themselves in an enclosed square with exits giving access to the town only through narrow roads immediately under the inner walls of the fortifications; thus coming under fire once again from the defenders.

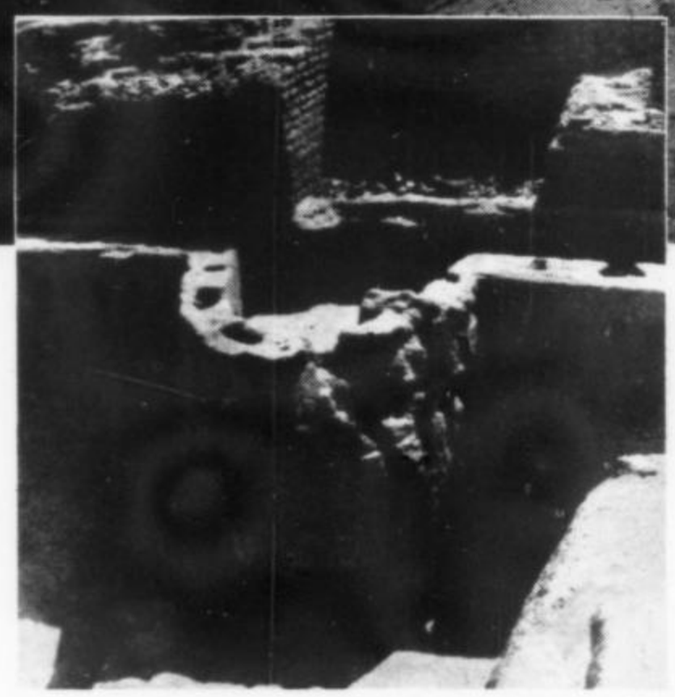
THE discovery of these complex and elaborate fortifications at Buhen shows that the Egyptians of that time were holding their newly won territory against a well organized enemy whose military prowess was by no means negligible. Strong as they were, these great defences were not sufficient to preserve the town, and with the weakening of Egyptian power following the Asiatic invasions of their homeland, the people of the South stormed and sacked the fortress about 1650 B.C.

Thereafter it remained a gigantic and partly burnt ruin for many years, until the advent of the warrior Pharaohs of the 18th Dynasty (1555-1350 B.C.), who after the expulsion of the Asiatic usurpers in Egypt, turned their attention once more to their last possessions in the south. Buhen was reoccupied and its original fortifications were rebuilt and strengthened to form a citadel in the centre of a much larger town with a new defence system of over a mile in extent surrounding it. A fine temple was built by Queen Hatshepsut (B.C. 1495), the town expanded and apparently remained secure, occupied by a thriving community, until the final eclipse of Egyptian power at the close of the 20th Dynasty (B.C. 1090).

A large part of this great outpost of Egyptian civilization has already been excavated by the Egypt Exploration Society's expeditions, and valuable new material and knowledge has been made available for the historian's research. Two more seasons of exploration will be necessary before the whole area is revealed; but sufficient is now visible to show that here at Buhen we have a unique example of Egyptian military architecture splendidly preserved.

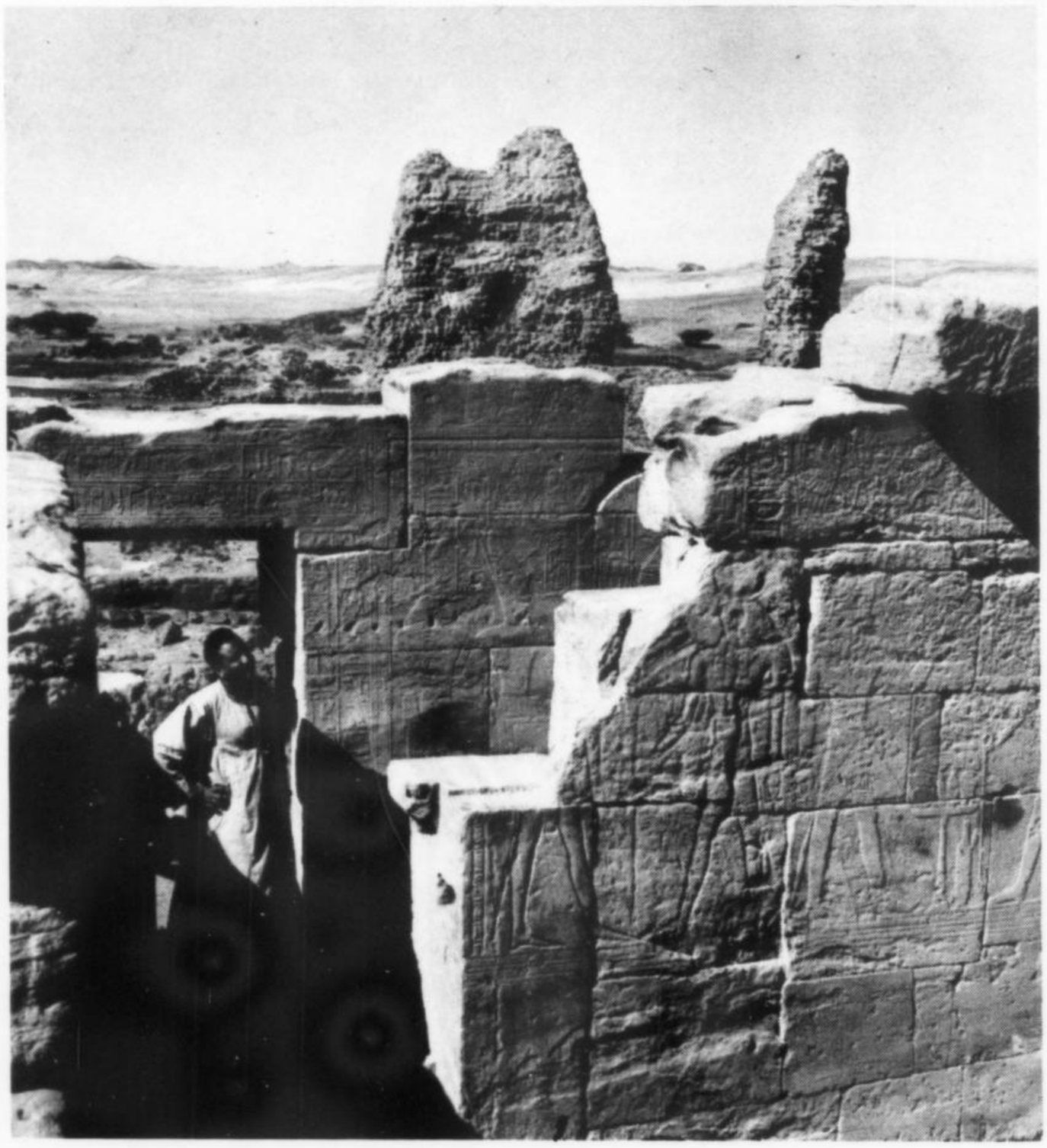
★

Unesco-Paul Almasy



Elaborate defence system enclosing the ancient Nubian town of Buhen included a massive brick wall 36 feet high with projecting rectangular towers. At the foot of the wall was a brick paved rampart with a fire-step (inset, right), protected by a loopholed parapet, overhanging a dry ditch 30 feet wide.

W.B. Emery-London University



Remains of bas reliefs covering walls of one of two temples built inside twin fortresses of Semneh and Kumma, dating from 1500-1400 B.C. An air survey carried out in the Sudan has revealed the existence of more than 100 ancient historical sites which still need to be at least partly explored, excavated and recorded.

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Letters to the Editor

A 'TERRA INCOGNITA'

Sir,

In THE UNESCO COURIER for February 1960, (special issue dealing with the antiquities of Nubia and the need to save them before they are flooded by the waters of the Aswan Dam), I found the material published by you of considerable interest. I must, however protest at the small amount of space given to the antiquities of the Sudan as compared with those of Egypt... It is necessary to point out... that the whole of Egyptian Nubia has been very carefully surveyed on two occasions. The first occasion was when carried out by Dr. Reisner and others when the Aswan dam was first built and the second, the survey by Professor Emery in the 1930's when the dam was heightened. As a result of this, Egyptian Nubia is one of the best studied areas in the world from the point of view of archaeology, and although it is certainly of great importance that everything possible should be done to save the existing monuments, the area can in no way compare for present archaeological importance with that part of the Sudan that is to be flooded.

Since Egyptian Nubia has been very carefully surveyed and excavated it has little left in the way of new information to give us. The area to the south of the frontier in the Republic of the Sudan has only had a few and sporadic archaeological investigations carried out and here almost everything is to be done *ab initio*. In the northern Sudan no full archaeological survey has ever been carried out; several hundred sites are known and there is a vast amount of new archaeological information waiting to be gleaned. There can be no question at all but that for additions to knowledge the Sudan side of the frontier is of the greatest importance.

Dr. Vercoutter himself in the article you print speaks of Sudanese Nubia as *terra incognita* and this is in the most literal sense of the word true. It is here in the Sudan that the greatest archaeological effort is required; it may well be that the cost of carrying out an archaeological survey here will be less than the enormous sum required for preserving the monuments of Egypt, but in view of the extreme importance of this area for the history and archaeology of the whole of the African continent it shows a remarkable lack of sense of proportion to relegate it to one short article of only two pages of texts in an issue of your journal of 60 pages. I very much hope that you can redress this incorrect balance by issuing a future number largely concerned with the antiquities of the Sudan.

P. L. Shinnie
Professor of Archaeology
University College of Ghana

Ed Note: See page 30. *Further articles on Sudanese Nubia are also foreseen.*

WHAT ARE WE WAITING FOR ?

Sir,

In your April "Letters to the Editor" column, M. L. de Guesnet expresses doubts about the number of people who are said to use Esperanto. You publish an editorial reply and the subject now seems to be closed. However, I don't think that the problem has been outlined correctly. It is not a question of knowing how many people speak Esperanto, but rather how many would use it if they were sure of finding a correspondent or if the need to use it became obvious.

This will not be possible as long as idealists and dreamers alone learn it and try to propagate its use. Official organizations must include it in their programmes of general education and in those concerned with the commercial, touristic and technical fields.

Half a century of international congresses have proved that Esperanto is very much alive and capable of remaining so. Today we must make use of it. Nor is it a question of deciding if Esperanto is perfect or if, by chance, Esperantido, Interlingue or any future improvement is to be preferred.

These points of view should, I feel, be acceptable to partisans of any of these languages. Finally, every nation should choose one or another of them. The hope expressed by UNESCO having already pointed the way, why don't we accept it without delay?

Jean Debest
Arcueil, France

MILLIONS MORE MOUTHS TO FEED

Sir,

The issue of THE UNESCO COURIER of April 1960 (World Mobilization Against Malaria) instigates some reflections. One thousand million persons in danger, you wrote. The projected mobilization against anopheles is meant to pull them out of the malaria danger, but, so far as I can see, only to put them into the hunger danger. What is worse for parents: to see their children die of malaria or of a chronic empty stomach? I wonder if it wouldn't be better to start a programme of family planning instead of an irreversible campaign against the mosquito and its deadly implications. How long will the economic advantages you wrote of in impressive numbers remain an advantage ? It would be a horrible paradox, indeed, if the activities of the WHO canceled out the activities of the FAO. These problems are worth thinking about, so, would it be possible to dedicate an issue of THE UNESCO COURIER to the prospects of family planning, and the ethical problems which bring the activities of the UNESCO along with them?

P. Kloos
Amsterdam, Netherlands

Ed. note: *An issue on the world's population problem is being planned for a later date. An issue on the world's hunger and steps to combat it is foreseen for* 1962. *See also page* 2.

ROOM FOR ALL RELIGIONS

Sir,

As a Christian, as an American, and as a citizen of the world. I have read THE UNESCO COURIER for years. When my wife was alive, I always read the articles aloud to her. One which interested her deeply was on understanding between East and West.

I agree with the principle, as set forth in the Universal Declaration of Human Rights of the U.N., that "recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world."

It is a shame before mankind and a sin before God that as yet the high principles of freedom and equality, subscribed to by so many nations in the Declaration, are not lived up to fully by any nation in the world and are flagrantly violated by some.

The question, then, is how best may we serve the cause of human freedom?

I feel what THE UNESCO COURIER is doing to *educate* regarding other nations, races, and peoples is very important. I subscribe to the COURIER because I believe in education for human understanding—international, intercultural, interracial, and interreligious. But I do not believe that education is enough. We will not achieve *recognition* of the rights of others unless recognition is taken of the fundamental fact of the Fatherhood of God, as well as the brotherhood of man.

As a Christian I believe Christ was and is unique—the Son of God, the Light of the World, the Prince of Peace. Yet, as a Christian, I believe, also, that God revealed Himself through other religious leaders, Buddha, Mohammed, Confucius, Moses. The Golden Rule and many other religious principles are common to all the great religious.

If due respect were paid to the worth and validity of all religions, I do not see why there would be serious objection to articles in the COURIER by outstanding Christian thinkers and practical leaders of the faith—for example the Archbishop of Canterbury, Pope John, Stanley Jones, Martin Luther King.

Palmer Van Gundy
Los Angeles, U.S.A.

From the Unesco Newsroom

AWARD FOR CALDER 'MOBILE': The Architectural League of New York has awarded its 1960 Gold Medal of Honour to Alexander Calder for his "mobile" sculpture "Spiral" at UNESCO Headquarters in Paris. Last year, the same work by Calder was awarded the Carnegie Institute First Prize for Sculpture, and Joan Miro received the Guggenheim Prize for his ceramic walls at the UNESCO H.Q.

■ **ARID LANDS ON THE SCREEN:** *"Arid Lands" a* UNESCO *documentary film describing a problem which afflicts one-third of the land surface of the earth, has been given its première in Paris. Turning its lens on specific problems, the film also shows some of the solutions offered by science: de-salting water so it can be used for irrigation, modern techniques of water prospecting and harnessing the power of the sun. The film shows how* UNESCO'S *efforts —dating from* 1948*—have grown into a major international project, co-ordinating research and bringing it to bear on the dry belt running from North Africa, through the Middle East and across Asia.*

U. S. AID FOR WORLDWIDE MALARIA ERADICATION

OUT of one thousand four hundred million people either affected by malaria or living in areas exposed to it, close to 280 million were freed from the threat of the disease by the end of last year thanks to widespread eradication campaigns. Reporting this to the recent meeting of the World Health Assembly in Geneva, Dr. M.G. Candau, Director-General of the World Health Organization, warned that the WHO Malaria Eradication Special Account was seven million dollars short of the amount needed for the activities planned for 1960-61. "With the exception of one country [the United States] which alone has provided more than 90 per cent of the funds available, actual contributions still continue to lag far behind good intentions and assurances of support." Figures released by the U.S. Government show that for the 1960 Fiscal Year $32 million of special assistance funds has been programmed for U.S. participation in the worldwide malaria eradication programme. This includes $3 million for WHO and $2 million for the Pan American Sanitary Organization. The balance is being used directly to support malaria eradication in 25 countries in the Far East, Near East, South Asia, Africa and Latin America.

ANTI-'PIRATING' AGREEMENT: A draft convention for the protection of performers, recorders and broadcasters was adopted unanimously by a meeting of legal experts who met recently in The Hague under the auspices of the International Labour Organization, UNESCO and the Berne Union. The new agreement, to be signed a conference early next year, will prevent the "pirating" of performance dues, which has become more frequent since the development of new techniques for recording sound and image .

WORLD REPORT ON ELECTRONIC COMPUTERS: Machines can now control other machines, predict the weather, memorize all the world's knowledge, compose music, translate languages and solve in a few seconds problems on which mathematicians might spend a lifetime. These remarkable powers of present-day computers are described in a recently published UNESCO report, "Proceedings of the International Conference on Information processing" which brought 2,000 electronic computer experts from 39 countries to Paris last year. This 520-page, multilingual report which gives a complete picture of current research in information processing, is published by Unesco, Paris, R. Oldenberg, Munich, and Butterworths, London. Its price is $25.00 ; £7-7-0; 100 NF or DM 84.

Clearing House, UNESCO, *Place de Fontenoy, Paris 7e.*

CENTRE FOR SAFETY: The International Labour Office recently established an International Occupational Safety and Health Information Centre in Geneva, in collaboration with the International Social Security Association. The Centre will provide information on various aspects of safety and health in many fields including mining, industry, building and civil engineering, transport, public services and agriculture. Details and information can be obtained from C.I.S., c/o International Labour Office, 154, route de Lausanne, Geneva, Switzerland.

■ **FILMSTRIPS HONOUR DARWIN & CHEKOV:** *The life and work of Anton Chekov, the centenary of whose birth is being celebrated this year, is illustrated in a* 40*-frame filmstrip now released by* UNESCO. *Its sub-titles are given in a booklet edited by Madame Marie-Madeleine Rabecq, Curator of the Pedagogical Museum in Paris, in which a preface describes Chekhov's life and work. Madame Rabecq is also author of the commentary for another filmstrip which is devoted to Charles Darwin, the publication of whose "Origin of Species" in* 1859 *was marked by centenary celebrations last year. Full information on these filmstrips can be obtained from the Audio-Visual Media Division, Unesco, Place de Fontenoy, Paris 7e.*

■ **TOP FILM COUNTRIES:** *For the past five years, Japan has regularly been outproducing the U.S.A. and has become the world's largest maker of feature films* (331 *in* 1955 *and* 352 *in* 1956 *compared with* 305 *and* 307 *respectively in the U.S.A.) Even tiny Hong Kong produces more feature length films—*227 *in* 1956*—than France and Italy combined. These are but two of the many surprising facts given in "Orient—A Survey of Films Produced in Countries of Arab and Asian Culture" published by the British Film Institute in London at* UNESCO'S *request and with its help. This* 92*-page survey, of which a limited number of copies are available, can he obtained by writing directly to the Mass Communication*

■ **ATOMS FOR PEACE:** *A mobile exhibition illustrating many of the uses of atomic energy has recently been touring the principal cities of Mexico. The display was organized by the Mexican National Nuclear Energy Commission with the assistance of the International Atomic Energy Agency (IAEA) which provided a mobile radioisotope laboratory. This was used by Mexican universities to initiate young scientists in basic isotope techniques and has resulted in several universities deciding to start regular training courses in this field. The laboratory, a gift to the IAEA by the United States, is now to visit Argentina. IEA's first mobile radioisotope unit, also a gift from the U.S.A. has been used for training in Europe and is now going to the Far East.*

IMP. GEORGES LANG, PARIS IMPRIMÉ EN FRANCE

WINDOW ON THE WORLD

Once a month THE UNESCO COURIER presents to its readers a panorama of the modern world. Without being either too learned or too "popular" in its approach, its well-illustrated articles give a vivid picture of the endless diversity of peoples and countries. There is no facet of the present-day world on which it does not touch—the sciences man has developed, the cultures he has created, the knowledge he has amassed.

THE UNESCO COURIER, now in its thirteenth year, does more than merely satisfy the desire for information about contemporary problems; it throws light on every aspect of human endeavour, strengthens the links between the peoples in every corner of the globe, fosters international understanding and advances the cause of peace.

You can help by telling your friends, colleagues and business associates or your local librarian about THE UNESCO COURIER. It also makes an ideal birthday or Christmas gift. As a gift for your friends abroad, you can subscribe to the French, Spanish or Russian editions.

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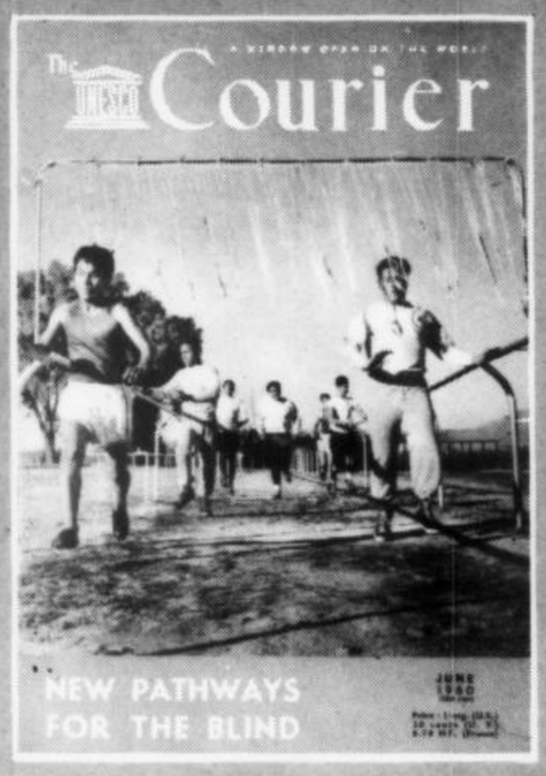

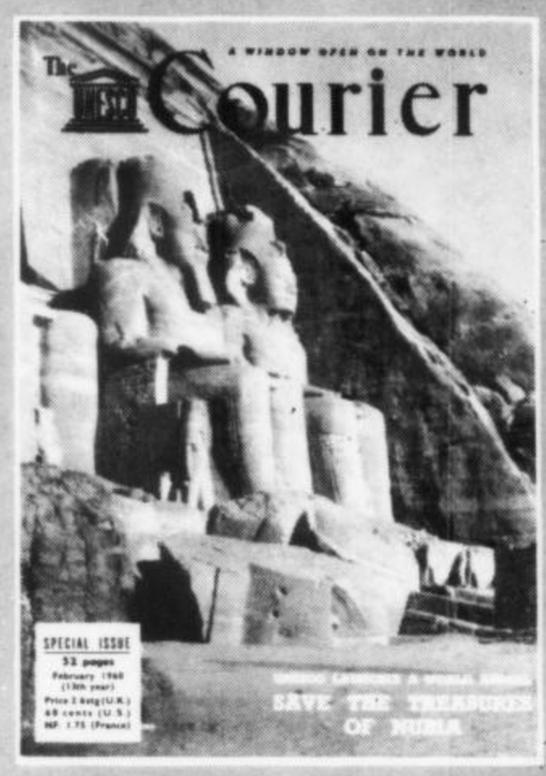

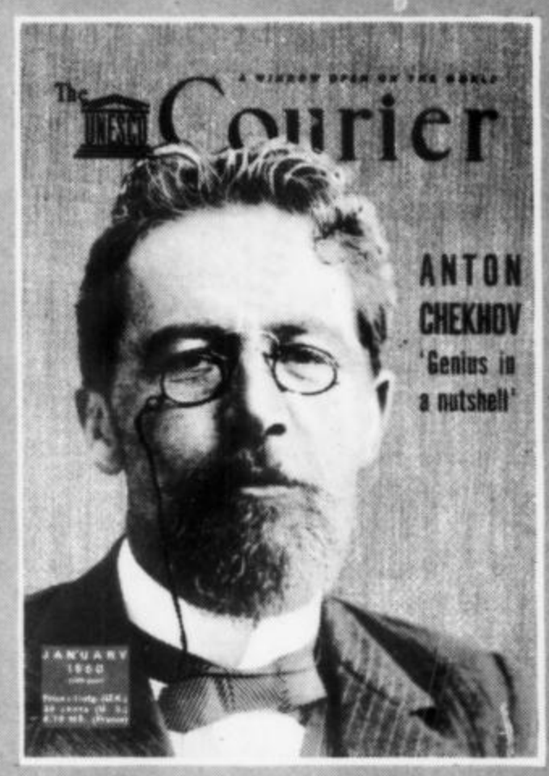

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BELGIUM. — For The Unesco Courier: Louis de Lannoy, 22, Place De Brouckère, Brussels, C.C.P. 338.000. (fr. b. 100.) Other publications: Office de Publicité, 16, rue Marcq, Bruxelles, C.C.P. 285-98; N.V. Standaard-Boekhandel, Belgiëlei 151, Antwerp.

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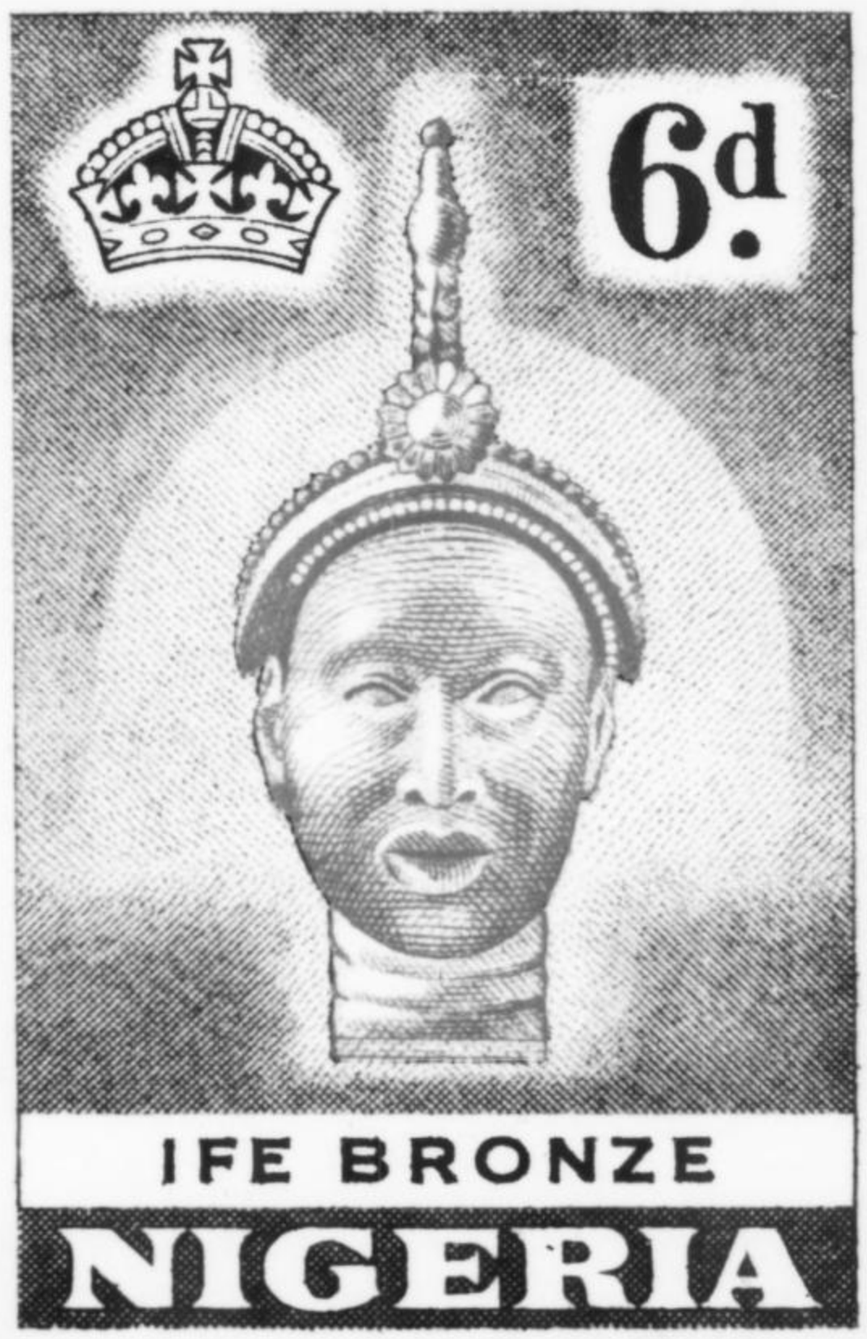
FINE ARTS ON STAMPS

A collection of stamps can also be a fine arts collection, a veritable museum in miniature (see page 20). Art from antiquity to yesterday has been reproduced on stamps in more than 125 lands which have paid tribute to their past and to their artists. The Netherlands has honoured Rembrandt with a series of his works, including self-portrait (opposite). Below, reproduction on a Japanese stamp of "Beauty Looking Back", an 18th century woodcut by Moronobu. Right, an Ife bronze head represented on a Nigerian stamp.